DAIKIN McQUAY®

Catalog 1114-1

SmartSource™ 2-Stage Horizontal & Vertical Water Source Heat Pumps

GTH - Horizontal Ceiling

GTV - Vertical Floor

Unit Sizes 026 – 072 • R-410A Refrigerant

AHRI CERTIFIED www.ahridirectory.org Water Source HP ANSI/AHRI/ASHRAE/ISO13256-1

ETL LISTED

Engineered for flexibility and performance™

Contents

Model Nomenclature 3

AHRI Performance Data 5

Introduction 6

SmartSource™ 2-Stage Horizontal & Vertical Water Source Heat Pumps 6

SmartSource Unique Features 7
- Model GTH-Horizontal & GTV-Vertical Unit 7
- Four Unique Dehumidification Options: 8
- Hot Gas Reheat Coil 8
- Desuperheater 8
- Loop Pump(s) 8
- Waterside Economizer 9
- Electric Heat (internal or external) 9
- Designed-in Sound Reduction 9
- Cabinet Insulation 10
- Unit Configurations 10
- Field Adjustable ECM Fan Motor 11
- Two-Stage Compressors - Double Isolated 11
- Water Connections 11
- Stainless Steel Drain Pan 11
- Blower Section 11
- Disconnect Switch (Option) 11
- Filter & Filter Rack 12
- Horizontal Unit Hanger Bracket 12
- CorMax® Connections 12
- Air-to-Refrigerant Coil 12
- Refrigeration System 12

Unit Control 13
- MicroTech III SmartSourcee Unit Control & I/O Expansion Module 13
- Built-in Diagnostics 13
- Rotary Fan Speed Selection Switch 13
- Operating Modes 14
- Unit Protections & LED Fault Status Annunciation 16
- MicroTech III SmartSource Unit Controller with LonWorks Communication Module 18
- MicroTech III SmartSource Unit Controller with BACnet Communication Module 19

Accessories 20
- Hoses, Hose Kits and Shutoff Ball Valves for SmartSource Water Source Heat Pumps 20
- Shutoff Ball Valves with Memory Stop 20
- 2 & 3-Way Motorized Water Valves 20
- Supply and Return Hose Kits 20
- Condensate Hose Kits 22
- Electric Duct Heaters (Horizontal Units) 22
- Filters 22

Thermostats 23
- Thermostats and Remote Sensors 23
- Thermostats & Remote Sensors used with GT 2-Stage Units 25
- Sensors used with GT 2-Stage Units 26

Applications 27
- Typical Vertical Installation 27
- Typical Horizontal Installation 28
- Ductwork and Attenuation 28
- Piping 30
- Water System Quality 31
- Condensate Drain 32
- Operating Limits 32

Unit Selection 33
- Boiler/Tower (Water Loop) Application: 33
- Geothermal (Ground Loop) Application: 33
- Loop Pump Application and Selection 34

Capacity Data – Size 026 (800 CFM) 36

Capacity Data – Size 032 (1000 CFM) 38

Capacity Data – Size 038 (1250 CFM) 40

Capacity Data – Size 044 (1400 CFM) 42

Capacity Data – Size 049 (1600 CFM) 44

Capacity Data – Size 064 (2000 CFM) 46

Capacity Data – Size 072 (2160 CFM) 48

Performance Data 50
- Fan Performance 50
- Air Flow Correction Factors – Full Load 51
- Air Flow Correction Factors – Part Load 52
- Loop Pump Performance 52
- Desuperheater Performance 53
- Electric Heat Performance 53
- Waterside Economizer Cooling Capacity - Vertical Unit 53
- Waterside Economizer Cooling Capacity - Horizontal Unit 54

Electrical Data 55

Correction Factors 56
- Motorized 2-Way Water Valve 56
- Antifreeze 56

Physical Data 57
- Vertical Units 57
- Horizontal Units 57

Dimensional Data 58
- Horizontal Unit 58
- Vertical Unit 60

Engineering Guide Specifications 62
- Horizontal Unit 62
- Vertical Unit 67

Appendix-A 72

Appendix-B 72

Note: *Text displayed in* ***Bold-Italics*** *designate standard offering.*

Category	Code Item	Code Option	Code Designation & Description *(Bold-Italic = Standard)*
Product Category	**1**	**1**	***W = Water Source Heat Pump***
Model Type	**2**	**2-3**	***GT = High Efficiency 2-Stage***
Configuration	**3**	**4**	***H = Horizontal***
			V = Vertical
Nominal Capacity	**4**	**5-7**	***026 = 26,000 Btuh Nominal Cooling***
			032 = 32,000 Btuh Nominal Cooling
			038 = 38,000 Btuh Nominal Cooling
			044 = 44,000 Btuh Nominal Cooling
			049 = 49,000 Btuh Nominal Cooling
			064 = 64,000 Btuh Nominal Cooling
			072 = 72,000 Btuh Nominal Cooling
Unit Control	**5**	**8**	***B = MicroTech III SmartSource Unit Controller***
Design Series (Vintage)	**6**	**9**	1 = Revision / Design Series 1
Voltage	**7**	**10**	***E = 208-230/60/1***
			F = 208-230/60/3
			J = 265/60/1
			K = 460/60/3
Range for Entering Water/Glycol Temp.	**8**	**11-12**	GW = Ground Water
			WL = Water Loop
			GL = Ground Loop
Return Air Location	**9**	**13**	L = Left-Hand Return Air & Right-Hand Piping
			R = Right-Hand Return Air & Right-Hand Piping
Discharge Air Location	**10**	**14**	E = End (Horizontal Unit Only)
			T = Top (Vertical Unit Only)
			S = Straight (Horizontal Unit Only)
Fan Motor	**11**	**15**	***4 = ECM Constant CFM***
Dehumidification Option	**12**	**16**	B = Hot Gas Reheat Smart Dehumidification
			C = Simplified Dehumidification (Lower CFM no HGRH or no Humidistat)
			D = Humidistat Controlled Dehumidification (No HGRH)
			E = Humidistat Only
			Y = None
Sound Package	**13**	**17**	***Y = None***
			A = Premium
Coaxial Heat Exchanger Construction (Supply Liquid / Refrigerant)	**15**	**19**	***C = Copper Inner Tube - Steel Outer Tube***
			S = Cupronickel Inner Tube - Steel Outer Tube
Primary Air Coil Option	**16**	**20**	***S = Standard***
			E = E-Coated
Communication Module	**19**	**24**	B = BACnet
			L = LonWorks
			Y = None
Filter Rack	**20**	**25**	***2 = 4-Sided, 2" w/Duct Collar & Door***
			3 = 4-Sided, 2" w/Duct Collar, Door, Hi-Merv Seal
			4 = 4-Sided, 4" w/Duct Collar, Door, Hi-Merv Seal
			Y = None
Filter Type	**21**	**26**	***A = Disposable***
			E = Merv 8 Factory-Installed
			G = Merv 13 (4-inch thick) Factory-Installed
			Y = None
Water Coil - Indoor Air	**22**	**27**	E = Waterside Economizer
			Y = None
Electric Heating - Indoor Air	**23**	**28**	C = 5.0 kW Internal Electric Heater
			E = 10.0 kW Internal Electric Heater
			F = 15.0 kW Internal Two Stage Electric Heater
			G = 20.0 kW Internal Two Stage Electric Heater
			P = Control for Electric Heat, Single 24V Signal (Field-installed Duct Heater by others)
			Y = None
Control Secondary Heat Type	**24**	**29**	B = Boilerlerss Electric Heat
			E = Emergency Electric Heat
			P = Primary Electric Heat (No Heat Pump Heating)
			S = Supplemental Heat
			Y = None

Model Nomenclature

Category	Code Item	Code Option	Code Designation & Description *(Bold-Italic = Standard)*
Desuperheater (Hot Water Generator)	**25**	**30**	D = Desuperheater ***Y = None***
Loop Pump	**26**	**31-32**	1S = One Low Head 230 Volt Pump, Grundfos UP26-99F 1L = One High Head 230 Volt Pump, Grundfos UP26-116F 2S = Two Low Head 230 Volt Pumps, Grundfos UP26-99F 2L = Two High Head 230 Volt Pumps, Grundfos UP26-116F 3S = One Low Head 115 Volt Pump, Grundfos UP26-99F 4S = Two Low Head 115 Volt Pumps, Grundfos UP26-99F ***YY = None***
Coaxial Coil Supply Liquid Flow Control	**27**	**33**	B = 2-Way, Motorized - 24v Valve Control, NO ***Y = None***
Coaxial Coil Supply Liquid Auto Flow Reg	**28**	**34**	A = Auto Flow Control 1.5 GPM B = Auto Flow Control 2.0 GPM C = Auto Flow Control 2.5 GPM D = Auto Flow Control 3.0GPM E = Auto Flow Control 4.0 GPM G = Auto Flow Control 5.0 GPM H = Auto Flow Control 6.0 GPM I = Auto Flow Control 8.0 GPM J = Auto Flow Control 9.0 GPM K = Auto Flow Control 10.0 GPM L = Auto Flow Control 11.0 GPM M = Auto Flow Control 12.0 GPM N = Auto Flow Control 13.0 GPM P = Auto Flow Control 15.0 GPM S = Auto Flow Control 18.0 GPM ***Y = None***
Desuperheater Water Flow Options	**31**	**37**	Q = Pump - 208-230/60/1 Voltage ***Y = None***
Water Coil Piping Package Options (Hot Water or Waterside Economizer	**35**	**41**	A = 3-Way Motorized - 24V Valve Control, NO to Coax
Primary Drain Pan Material	**39**	**45**	***S - Stainless Steel***
Compressor Insulation	**41**	**47**	B = Compressor Insulation Sound Blanket ***Y = None***
Compressor Isolation	**42**	**48**	***B = Isolated base***
Insulation - Compressor Compartment	**43**	**49**	***A = 1/2" Fiberglass Skin-Faced*** B = 1/2" Fiberglass - Foil Faced C = 3/8" Closed Cell Foam
Insulation - Air Side	**44**	**50**	A = 1/2" Fiberglass Skin-Faced ***B = 1/2" Fiberglass - Foil-Faced*** C = 3/8" Closed Cell Foam
Insulation - Piping	**45**	**51**	***A = Insulated Piping*** ***Y = None***
Cabinet Finish	**47**	**53**	***A = Powder Coat*** Y = None
Cabinet Color	**48**	**54**	Y = None W = Off White ***T = Textured Charcoal Bronze***
Fan Motor Control	**50**	**56**	***C = Various Speeds with 4 Adjustment Settings***
Disconnect Switch	**53**	**60**	***Y = None*** N = Non-Fused
Control Transformer	**55**	**62**	1 = 50VA Control Transformer 2 = 75VA Control Transformer
Thermostat/Sensor Control	**56**	**63**	***T = Thermostat Control*** S = Sensor Control
Expansion Device	**75**	**82**	***A = Thermal Expansion Valve Thermal Bulb and Equalizer Tube***
Alarm Relay	**76**	**83**	A = Alarm Relay (Dry Contacts) ***Y = None***
Extended Warranty, Parts Only	**91**	**105-106**	***YY = None*** 1E = 1-Year, Entire Unit Parts Only 2C = 2-Year Parts (Compressor Only) 2R = 2-Year Parts (Refrigerant Circuit) 3C = 3-Year Parts (Compressor Only) 3R = 3-Year Parts (Refrigerant Circuit) 4C = 4-Year Parts (Compressor Only) 4R = 4-Year Parts (Refrigerant Circuit)

AHRI Performance Data

Rated in accordance with AHRI/ASHRAE/ISO Standard 13256-1.

Unit Size	Capacity Modulation	Pressure Drop		GPM	Cooling			Heating		
		PSI	Ft		CFM	Total Cap.	EER	CFM	Tot Cap.	COP
Water Loop										
026	Full load	2.5	5.7	6.5	800	26400	18.0	800	29300	5.7
	Part load	2.5	5.7	6.5	700	19800	20.3	700	21800	6.4
032	Full load	3.3	7.4	7.5	1000	32500	16.5	1000	36400	5.3
	Part load	3.3	7.4	7.5	875	24700	18.5	875	27800	6.0
038	Full load	2.0	4.7	9.0	1250	39000	17.6	1250	44400	5.6
	Part load	2.0	4.7	9.0	1090	28300	20.2	1090	32600	6.4
044	Full load	2.0	4.7	10.5	1400	44400	17.3	1400	50100	5.4
	Part load	2.0	4.7	10.5	1225	32900	19.7	1225	36600	6.0
049	Full load	2.7	6.2	12.2	1600	48900	16.7	1600	55300	5.3
	Part load	2.7	6.2	12.2	1400	36900	19.6	1400	40800	6.0
064	Full load	4.8	10.9	16.0	2000	64800	17.4	2000	76100	5.2
	Part load	4.8	10.9	16.0	1750	48200	19.7	1750	53800	5.8
072	Full load	5.7	12.9	17.5	2160	72700	15.9	2160	88400	5.0
	Part load	5.7	12.9	17.5	1920	56400	18.5	1920	64600	5.5
Ground Water										
026	Full load	2.5	5.7	6.5	800	29700	26.9	800	23400	5.0
	Part load	2.5	5.7	6.5	700	22800	35.3	700	17200	5.1
032	Full load	3.3	7.4	7.5	1000	35800	24.0	1000	30100	4.8
	Part load	3.3	7.4	7.5	875	27600	30.1	875	22500	5.0
038	Full load	2.0	4.7	9.0	1250	42000	25.4	1250	36200	5.0
	Part load	2.0	4.7	9.0	1090	31400	34.2	1090	26000	5.3
044	Full load	2.0	4.7	10.5	1400	48300	25.4	1400	40600	4.7
	Part load	2.0	4.7	10.5	1225	36400	33.6	1225	29000	4.9
049	Full load	2.7	6.2	12.2	1600	53800	24.8	1600	45900	4.7
	Part load	2.7	6.2	12.2	1400	40700	33.5	1400	32900	4.9
064	Full load	4.8	10.9	16.0	2000	71000	24.7	2000	60600	4.6
	Part load	4.8	10.9	16.0	1750	53500	32.8	1750	43200	4.8
072	Full load	5.7	12.9	17.5	2160	78900	22.6	2160	70900	4.4
	Part load	5.7	12.9	17.5	1920	62400	30.8	1920	52300	4.6
Ground Loop										
026	Full load	2.5	5.7	6.5	800	27600	20.7	800	18100	4.1
	Part load	2.5	5.7	6.5	700	22000	29.8	700	15100	4.6
032	Full load	3.3	7.4	7.5	1000	33800	18.9	1000	23700	4.1
	Part load	3.3	7.4	7.5	875	26800	25.9	875	19800	4.5
038	Full load	2.0	4.7	9.0	1250	40200	20.1	1250	28100	4.2
	Part load	2.0	4.7	9.0	1090	30500	28.9	1090	22500	4.7
044	Full load	2.0	4.7	10.5	1400	45900	19.8	1400	31700	4.0
	Part load	2.0	4.7	10.5	1225	35500	28.3	1225	25600	4.4
049	Full load	2.7	6.2	12.2	1600	50600	19.2	1600	35900	4.0
	Part load	2.7	6.2	12.2	1400	39600	28.2	1400	29200	4.4
064	Full load	4.8	10.9	16.0	2000	67100	19.7	2000	47000	3.9
	Part load	4.8	10.9	16.0	1750	52200	28.0	1750	38300	4.3
072	Full load	5.7	12.9	17.5	2160	75300	18.1	2160	55200	3.7
	Part load	5.7	12.9	17.5	1920	60700	26.1	1920	46200	4.2

Legend: *Btuh = British Thermal Units per Hour*
CFM = Airflow Rate, Cubic Feet per Minute
COP = Coefficient of Performance
EER = Energy Efficiency Ratio
Ft = Feet of Water
GPM = Gallons per Minute
PSI = Pounds per Square Inch

Water Loop:
1. *Cooling capacity based on 80.6°F db, 66.2°F wb (27/19°C) EAT and 86°F (30°C) EWT.*
2. *Heating capacity is based on 68°F (20°C) EAT and 68°F (20°C) EWT.*

Ground Water:
1. *Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) EAT and 59°F (15°C) EWT.*
2. *Heating capacity is based on 68°F (20°C) EAT and 50°F (10°C) EWT.*

Ground Loop:
1. *Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) EAT and 77°F (25°C) EWT at full load or 68°F (20°C) at part load.*
2. *Heating capacity is based on 68°F (20°C) EAT and 32°F (0°C) EWT at full load or 41°F (5°C) at part load.*

Introduction

SmartSource™ 2-Stage Horizontal & Vertical Water Source Heat Pumps

Industry Leading Efficiences, Very Quiet Operation

SmartSource™ water source heat pumps from Daikin McQuay combine industry-leading efficiencies with low-noise operation, high indoor air quality and consistent air temperatures. So now you can do your part to conserve energy and enjoy a quiet and comfortable indoor environment.

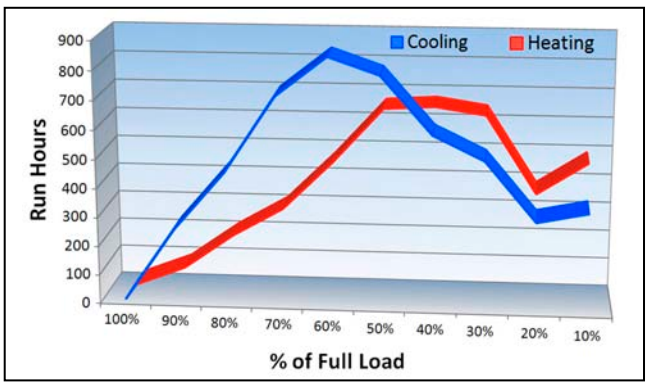
Why part load efficiency matters most

SmartSource water source heat pumps are available in both vertical and horizontal configurations and in sizes from 2 to 6 tons. Part load EERs range from 26.1 to 29.8 for geothermal applications, making these units one of the most efficient available to heat and cool a commercial space. They are ideal to assist with LEED certification and for earning energy rebates and tax deductions.

** Consult your utility provider for rebate opportunities.*

In most environments, heating and cooling systems operate at part load most of the time (see chart below). That's where SmartSource units with 2-stage compressors really shine. Here's how:

- **Quieter –** Units operate at lower fan speeds and compressor settings under part load. That significantly reduces noise.
- **More comfortable –** At lower fan speeds, more heat and humidity is removed as air passes through the unit. That means the air entering the room is more comfortable.
- **More consistent comfort –** At part load, 2-stage compressors run more often, delivering a more consistent room air temperature.
- **More energy savings –** At lower speeds, units use less energy, so you save on utility costs.
- **Lower operating costs –** When motors and compressors cycle on and off less, they last longer. That means fewer repairs and longer part life.



Sample building load profile, St. Louis, MO

Very quiet

SmartSource water source heat pumps are exceptionally quiet, with published sound ratings as low as 46 dBA. Sound reduction packages are available for even greater attenuation. These units typically operate at low compressor and fan speeds a majority of the time. The result is even quieter operation, very low energy consumption and very uniform room air temperatures.

ECM motors are standard on all units, with field-selectable CFM settings. ECM motors are more efficient than traditional PSC motors, which is why most utilities offer rebates for their use. ECM motors also provide near-constant fan speeds at static pressures up to one inch. The result is improved air filtration capabilities and more uniform air distribution.

Durable construction

Cabinets on all units feature a rugged, texturized, powder-coat paint finish for exceptional durability. Slotted handles make it easy to remove panels for maintenance and service. Cleanable, foil-faced fiberglass insulation is standard in the air-handling section to minimize sound transmission while preventing fibers in the air stream. High-IAQ options include 3/8-inch, closed-cell insulation in both the compressor and air-handling sections.

Wide range of options

Available options on all units include auxiliary electric heat in both internal (vertical units only) and external configurations. MERV 8 and 13 filters are available, with standard 2 inch filter rack or an optional 4 inch filter rack that accept a two-inch or four-inch cartridges. A desuperheater option takes advantage of waste heat from the compressor to provide domestic hot water, ideal for apartments and condos. Also available is a waterside economizer to minimize mechanical cooling by using cool loop water to condition the space.

Several methods of dehumidification options are available, including hot gas reheat. For geothermal applications, a unit-mounted loop pump option reduces system complexity by eliminating the need for a central pumping system.

Typical applications for SmartSource water source heat pumps include schools, clinics, office buildings, government offices, senior living facilities and other projects, both new construction and retrofit, where high efficiency is a key specification.

Model GTH-Horizontal & GTV-Vertical Unit

Features

1. **ECM Fan Motor:** 4 field adjustable cfm settings and 28 programmed cfm values provide a wide range of airflow selections for quieter operation and lower energy consumption.
2. **Two-Stage Compressor:** available in a variety of commercial voltages, mounted on a double isolation system for reduced sound and vibration transmission.
3. **Refrigerant Circuit:** Utilizes R-410A refrigerant with a bi-flow thermal expansion valve for precise metering and four way solenoid reversing valve.
4. **MicroTech III SmartSource Controls:** Easy open-protocol integration with optional LonWorks® or BACnet®.
5. **Unit Status LED:** Instant visuals on unit operation for easy troubleshooting and advanced diagnostics.
6. **4-Sided Filter Rack with Standard 2" or Optional 4" Filters:** Designed for easy duct connection and filter maintenance. MERV 8 & 13 filter options with gasketed filter seals to meet LEED-NC EQc5 applications with a leakage rate less than 4 CFM per square foot of filter area at 0.5"ESP.
7. **Stainless Steel Drain Plan:** sloped with lipless drain connection for positive condensate flow to meet ASHRAE 62.1 Section 5.11.
8. **Flush Mounted Fittings:** Easy one-wrench connection, securely fastened to the cabinet corner posts.
9. **Blower and Motor Orifice Ring:** Easy service without removing the blower housing or disconnecting the unit from the duct work.
10. **Durable Cabinet Construction:** Heavy gauge steel with powder coated textured paint, lined with cleanable, foil-faced insulation on the airside.

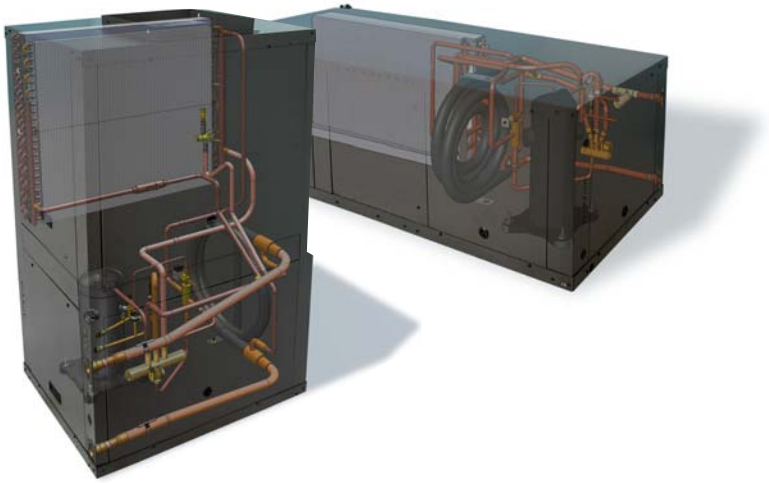
SmartSource Unique Features

Four Unique Dehumidification Options:

- **Smart Dehumidification –** Uses hot gas reheat, humidistat, 2-stage thermostat & smart air flow management for precise humidity control.
- **Simplified Dehumidification –** Uses a 3-stage thermostat to optimize unit capacity and fan speed for maximum latent capacity while decreasing room humidity levels.
- **Humidistat Controlled Dehumidification –** Uses a humidistat and 2-stage thermostat to control room humidity levels.
- **Dehumidification Only –** Uses a humidistat in cooling only mode.

Hot Gas Reheat Coil

For improved indoor climate control, Daikin-McQuay offers accurate and cost effective dehumidification control using a hot gas reheat option known as smart dehumidification. Hot gas reheat with smart dehumidification is an excellent solution for applications where maintaining low humidity in a space is crucial. With smart dehumidification, once the space temperature is satisfied, the humidistat signal diverts the high temperature refrigerant gas to the reheat coil located downstream of the cooling coil. The conditioned and reheated air prevents over cooling of the space and maximizes moisture removal for improved indoor comfort. The smart ECM fan system adjusts the air flow for optimal moisture removal, and helps keep sound levels at a minimum. It is especially effective during low load conditions when proper control is critical. Under humid conditions (60%RH) and typical loop water temperatures, the latent capacity is optimized for approximately 90% of the sensible capacity. With loop water conditions of 85°F, the leaving air temperature is approximately the same as the entering air temperature, resulting in effective dehumidification without over cooling the space.

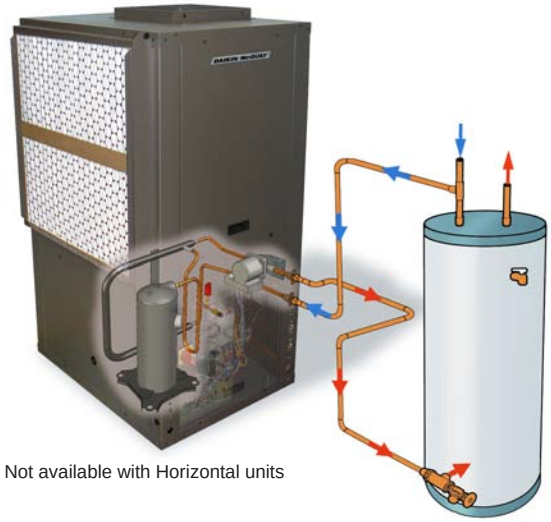


Desuperheater

The factory-installed desuperheater option saves energy by using heat that would otherwise be “wasted” to the water loop, and uses it to supplement the heating of domestic water. The desuperheater has a double-wall, vented coaxial heat exchanger, an optional water pump for 208/230- 1 and 3-phase applications, with controls to temper the make-up water.

Controls include a refrigerant discharge line thermostat, an Entering Water Temperature (EWT) thermostat and an “on-off” switch located on the outside of the unit cabinet to deactivate the desuperheater system during the heating mode.

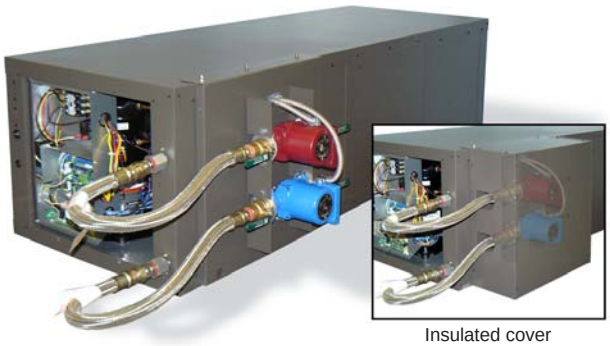
This option is available on vertical units sizes 2 tons and larger.



Not available with Horizontal units

Loop Pump(s)

Unit-mounted loop pump(s), available on horizontal and vertical unit sizes 2 tons and larger, eliminate the need for a central pumping station. Several loop pump options are available to match the system flow and head requirements for most geothermal and water loop applications. Sized for approximately 3 GPM/ton, both low and high head options are available in a single or dual (series flow) configuration. The series configuration essentially doubles the head capabilities. These pumps are available for 115 or 230 volt power. A factory supplied transformer is provided for single-point power supply.



Insulated cover

Waterside Economizer

The waterside economizer option helps to reduce energy consumption by using cool loop water temperatures to condition a space without energizing mechanical cooling. Even in the coldest weather a space can experience a build-up of ambient heat from people, equipment, lighting and the sun. Buildings with temperature controlled computer rooms, media/resource rooms or medical equipment rooms, benefit from the waterside economizer when the geothermal loop field or cooling tower temperatures are cool enough to provide air conditioning.

Variable flow pumping systems are recommended for these systems to further reduce energy consumption, while maintaining sufficient water flow during economizer operation.

The waterside economizer includes a hydronic cooling coil located upstream of the unit's evaporator coil and after the filter. When entering water temperatures are between 70° to 50°F, a 3-stage thermostat or room temperature sensor in conjunction with a factory-installed entering water temperature sensor and a 2-position 3-way diverting valve, determine when loop water can be diverted to the hydronic coil and the unit coax coil for economizer cooling. Smart fan controls further reduce energy consumption and sound levels by delivering optimum air flow during economizer operation. The MicroTech III SmartSource controller determines if the economizer and mechanical cooling can be activated together, while optimizing unit airflow. The controller also provides low temperature protection to avoid economizer operation when entering water temperatures are below 35°F.

Electric Heat (internal or external)

Factory installed electric heaters are available on vertical units. These heaters are located above the blower housing inside the discharge air plenum. Horizontal units utilize an external duct-mounted electric heater for field-installation. Unit controls are available for boilerless, supplemental, primary or emergency electric heat to serve several different application needs. Boilerless electric heat will be energized when the entering water temperature falls below set point. This will allow electric heat to function while ensuring the compressor remains off. With supplemental electric heat control, the wall thermostat will activate the compressor and heater simultaneously if necessary to maintain room heating conditions. For primary heat applications, only the electric heater will provide heat without energizing the compressor. Emergency heat is activated by a 24V thermostat signal to energize the external duct-mounted electric heat. For available electric heat sizes and voltages see "Model Nomenclature" on page 3, "Product Code Index", code item "23".

Horizontal unit external duct-mounted electric heater

Vertical unit internal factory-installed electric heater

Designed-in Sound Reduction

Provided as standard, the compressor mount has a unique dual-level vibration isolation system. The compressor is mounted on vibration isolation grommets to a heavy gauge mounting plate, then isolated from the cabinet base with rubber grommets to minimize vibration transfer. The compressor is equipped with thermal overload protection and is located in a well-insulated compartment away from the air stream to minimize sound transmission. All access panels have acoustic seals to eliminate panel vibration and minimize radiated sound levels. Fan noise can be minimized at low airflow with field adjustable ECM fan motor settings. An optional sound reduction kit adds a 3/4" thick acoustic foam panel of insulation to the fan section and a compressor blanket (unit sizes 026 to 072 only) to help further reduce operating sound levels.

SmartSource Unique Features

Cabinet

The SmartSource vertical floor and horizontal ceiling cabinet comes with a standard rugged, textured- non-glare, powder-coat charcoal bronze paint. All cabinetry is fabricated from heavy gauge G-60 galvanized sheet metal.

The vertical floor unit offers two cabinet configurations with 4 unique cabinet sizes that make up the 2 through 6 ton vertical heat pump product line. For maximum flexibility, each vertical unit is available in either a left-hand or right-hand return air arrangement to provide the optimum piping location and service access. The mirror image design of the units allow for configuring the system using minimum ductwork and piping. This helps reduce design, material and installation costs.

Horizontal ceiling mounted units offer 4 cabinet sizes in four unique cabinet configurations with the smallest possible footprint, allowing for optimum design flexibility. Ceiling mounted units ship with heavy metal brackets, rubber isolators, fasteners and washers to suspend and isolate the unit from the building.

Cabinet Insulation

Premium type insulation is provided standard with all SmartSource horizontal and vertical unit cabinets providing a high level of indoor air quality. As a standard the compressor compartment surfaces are lined with 1/2" fiberglass – multicoated type insulation. Separated from the compressor section by a partition, the blower section comes standard with 1/2" thick fiberglass cleanable foil face insulation with edges sealed or tucked to prevent introduction of fibers into the discharge air stream, providing maximum sound attenuation. The standard cabinet insulation meets NFPA 90A requirements, air erosion and mold growth limits of UL-181, fungal resistance test per ASTM-C1071 and ASTM G21, and meets zero level bacteria growth per ASTM G22. All insulation has a flame spread of less than 25 and a smoke developed classification of less than 50 per ASTM E-84 and UL 723.

Optional insulation is available in 3/8" thick closed-cell non fibrous type.

Unit Configurations

Figure 1: Two vertical unit configurations

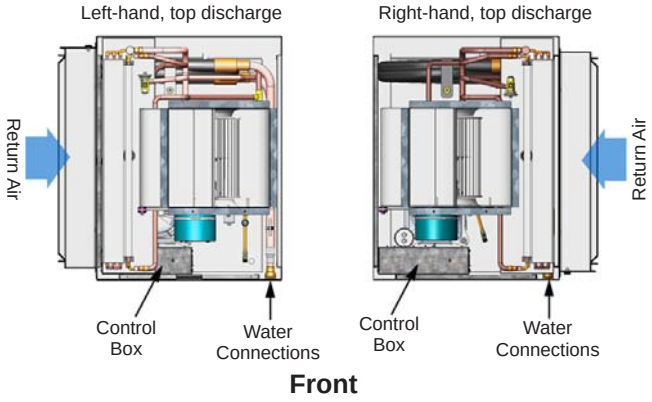
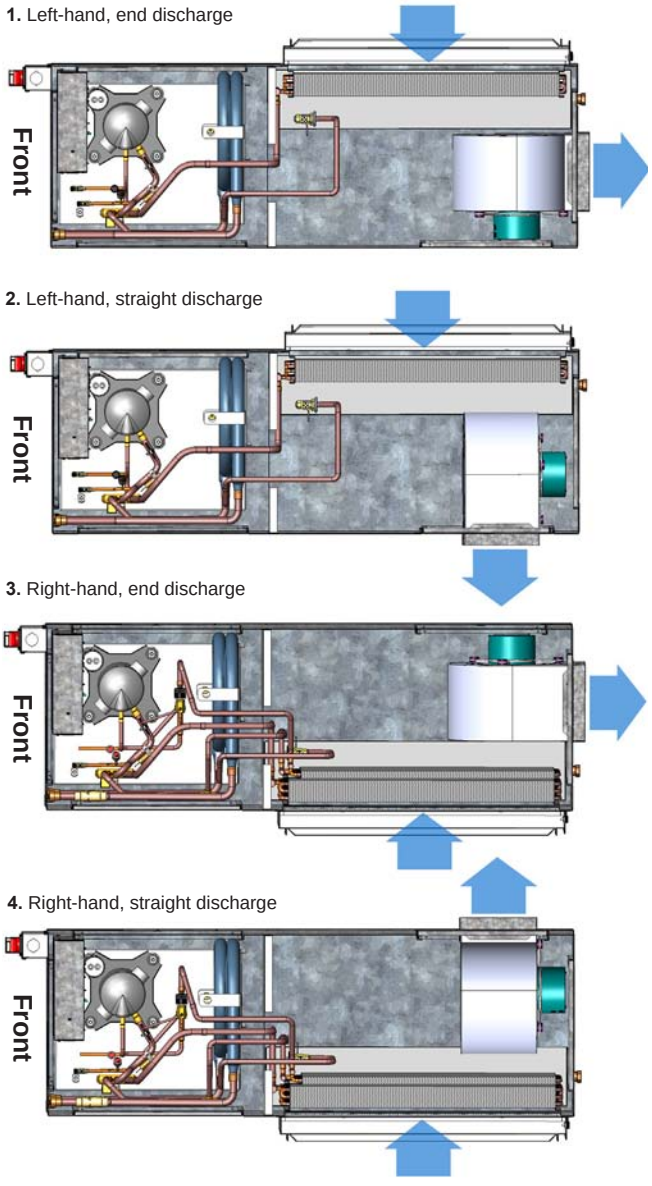


Figure 2: Four horizontal unit configurations



Note: *Unit left or right hand is determined by facing the piping connection (front) side of unit*

Field Adjustable ECM Fan Motor

ECM motors are standard on all units, with 4 field-selectable CFM settings and 28 programmed CFM values. ECM motors provide the ultimate in efficiency, performance flexibility and reduced sound levels. With inherent high efficiencies compared to conventional PSC or fix speed motors, the ECM motor can save operating energy. The factory installed rotary fan speed selection switch allows for easy commissioning through a simple click of the switch to set the CFM delivered to the space. This allows for field adjustment of air delivery to the space for sound sensitive applications or for increased air distribution.

Two-Stage Compressors - Double Isolated

The two-stage unloading scroll compressor provides excellent part load performance for improved humidity control and increased efficiency. The compressor has a unique dual-level vibration isolation system. Mounted on vibration isolation grommets to a heavy gauge compressor mounting plate, then isolated from the cabinet base with rubber grommets to minimize vibration transfer. The compressor is equipped with thermal overload protection and is located in an insulated compartment away from the air stream to minimize sound transmission.

Water Connections

The water and condensate connections are FPT fittings, securely mounted flush to the corner post to allow for connection to a flexible hose without the use of a back-up wrench. This helps reduce the time required to connect the unit and helps prevent delays due to shipping damage. All vertical units are internally trapped with clear vinyl tubing, to allow inspection of condensate drain.

Stainless Steel Drain Pan

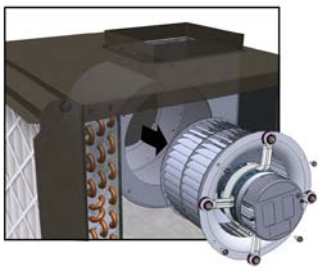
The vertical unit condensate drain pan is constructed of corrosion-resistant 304 stainless steel. It is wrapped in closed-cell insulation, double-sloped with a “lipless”, free-draining pipe connection for positive drainage and an internal trap for improved Indoor Environmental Quality (IEQ) that meets ASHRAE 62.1-2007 Section 5.11. The drain pan is provided with solid-state electronic condensate overflow protection, unlike the less reliable mechanical float switch used with many competitor drain pans. The horizontal unit condensate drain pan is sloped, allowing for the unit to be mounted level in the ceiling, without tilting the unit to encourage drainage as some competitor units require. It is constructed of the same high quality materials as the vertical unit drain pan.

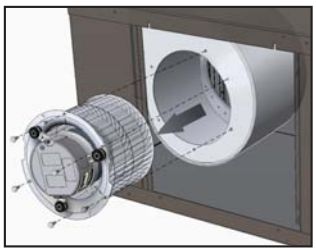
Vertical unit drain pan

Horizontal unit drain pan

Blower Section

The blower section includes the ECM motor, a direct-drive centrifugal fan, fan housing, and drain pan. A duct collar protrudes through the cabinet to facilitate field-supplied duct connection. The large size of the blower wheel allows it to rotate more slowly, reducing motor work to improve efficiency and provide for quiet operation. A large panel provides service access to the blower and motor. All blower/motor assemblies have a removable orifice ring on the housing to accommodate motor and blower removal without disconnecting the unit from the ductwork.





Disconnect Switch (Option)

SmartSource units are available with an optional non-fused disconnect switch, located on the unit front corner post. The disconnect switch is used to break power to the unit for ease of field service and is provided with a lockout/tag out feature.

SmartSource Unique Features

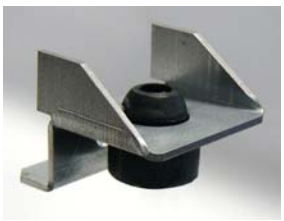
Filter & Filter Rack

Units come standard with a 2" (51mm) thick factory-installed throwaway filter, mounted in a 4-sided combination filter rack and return air duct collar. Filters can be easily removed from either side by interchanging the removable filter door to the right or left side by rotating the filter rack assembly 180 degrees. A 2" or 4" filter rack is available as a factory-installed selectable option to accept a Merv 8 or Merv 13 filter. The high Merv filter rack option is available with gaskets between it and the cabinet and along the edge of the tool-less removable door. The gaskets maintain the leakage rate below 4 CFM per square foot of filter area at .5" ESP.

Gasketing - keeps the leakage rate to less than 4 CFM per square foot of filter area at .5" ESP.
Filter Rack Assembly
Easily removed threaded knob to remove filter access door

Horizontal Unit Hanger Bracket

Each horizontal unit is furnished with a mounting kit that includes heavy metal hanger brackets for hanging the unit from field-supplied hanger rods. Rubber isolators are included for sound and vibration attenuation, as are mounting washers, bolts and lock washers. The hangers are attached to fasteners at each corner of the unit, which are an integral part of the cabinet.

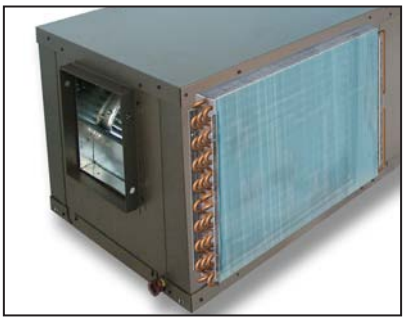


CorMax® Connections

Two CorMax valves are located inside the end access panel – one on the low side and one on the high side of the refrigeration circuit – for charging and servicing. All valves are 7/16" SAE fittings.

Air-to-Refrigerant Coil

The air-to-refrigerant heat exchanger is a large face area coil with copper tubes and aluminum fins. The fins are lanced and mechanically bonded to the tubes using finned edges on the inside which expand during assembly to enhance heat transfer capabilities. The maximum working pressure of the heat exchanger is 600 psig (4137 kPa). The coil is designed for optimal performance in both heating and cooling while maintaining the benefit of a compact size. Coils can be provided with an optional E-coating for extra corrosion protection to meet ASTM B-11 3000 salt spray test.



Refrigeration System

Units have a coaxial heat exchanger with a copper inner tube and a steel outer tube. The air coil is a large face area coil with copper tubes and aluminum fins. Safety controls include a 600 psi high-pressure switch and low-temperature sensor to lock out compressor operation at extreme conditions. For additional protection, a 7 psi (48 kPa) low-pressure switch to protect the compressor from low refrigerant charge. The low setting prevents nuisance trips while providing additional protection.

Unit Control

MicroTech III SmartSourcee Unit Control & I/O Expansion Module

The MicroTech III SmartSource Controller is a microprocessor-based control board in combination with an I/O Expansion Module for extra functionality. The control box is accessible through the left or right end corner panel on horizontal units and through the bottom-front access panel on the vertical unit. The unit controller is a hard wired interface and in combination with the I/O Expansion Module provides all the necessary field connections and functionality. All components are easily accessed for service or replacement.

Figure 3: MicroTech III SmartSource unit control board and I/O expansion module

Three control choices are offered with the MicroTech III SmartSource control system:

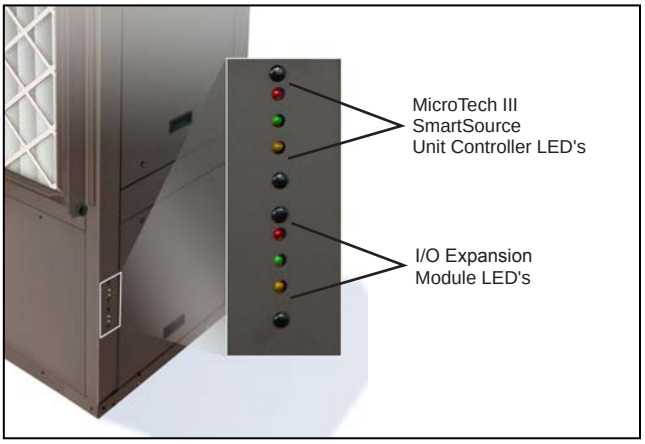
- MicroTech III SmartSource unit controller with I/O Expansion Module
- MicroTech III SmartSource unit controller with I/O expansion module and a LonWorks® communication module
- MicroTech III SmartSource unit controller with I/O expansion module and a BACnet® communication module

Each option features direct quick-connect wiring to all unit-controlled components for “clean” wiring inside the control box. Each control circuit board receives power from a 50 VA or optional 75 VA transformer. The main board can be wired for 24-volt AC output to the wall thermostat by using terminals R & C.

Built-in Diagnostics

External LED annunciators are located on the front corner of the unit chassis to quickly check the operating status of the unit. The I/O Expansion Module has an independent LED annunciator to identify operational fault conditions.

Figure 4: External LED annunciators



Rotary Fan Speed Selection Switch

A 4-position rotary switch located in the control box allows CFM settings to be field adjustable. Fan speed control optimizes unit fan speed based on thermostat/room sensor inputs. The rotary switch allows for manually setting an optimal fan speed specific to the application requirements. Each position on the rotary switch represents settings 1-4, see the example for a 2-ton unit in Table 1. For the complete list of fan speed settings see Table 16 on page 50.

Figure 5: 4-position rotary fan speed switch

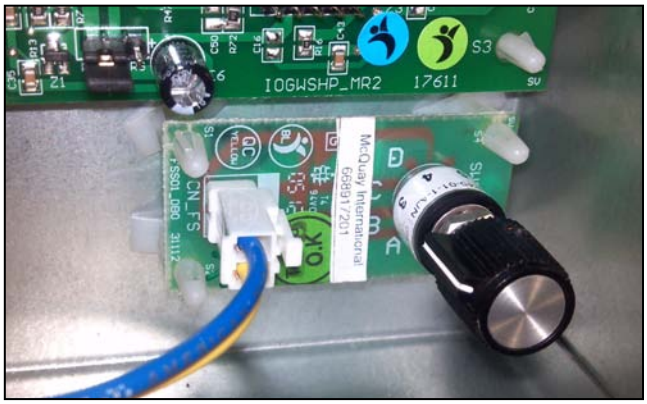


Table 1: Rotary fan speed settings (2-ton unit example)

CFM Setting	Part Load Stage 1 Heat	Full Load Stage 2 Heat	Part Load Stage 1 Cool	Full Load Stage 2 Cool	Fan Only	Dehumidification	Electric Heat
Setting 4 (High)	650	900	650	900	450	600	900
Setting 3 (Standard)	525	800	525	800	400	533	800
Setting 2 (Medium)	470	670	470	670	335	447	800
Setting 1 (Low)	400	525	400	525	263	350	800

Controls

Operating Modes

- **Start-up –** The unit will not operate until all the inputs and safety controls are checked for normal conditions.
- **Cooling Mode –** On a call for cooling, the fan will energize at its “fan only” setting, the pump request will engergize, the 45 second flow timer will start after the flow, compressor minimum off, and random startup timers are expired, the compressor and fan will start at the stage 1 cooling settings. If room setpoint conditions are not satisfied, the fan will operate at the stage 2 cooling settings. When the room setpoint conditions are satisfied, the compressor will shut off and the fan will operate according to its “fan only” setting when enabled for continuous fan operation. If fan cycling is enabled, the fan will turn off once room setpoint conditions are satisfied.
- **Dehumidification Modes –** There are four dehumidification modes of operation;

1. Smart Dehumidification with Hot Gas Reheat
2. Simplified Dehumidification
3. Humidistat Controlled Dehumidification
4. Dehumidification Only

   - **Smart Dehumidification –** Uses hot gas reheat, a humidistat, a 2-stage thermostat and air flow management for precise humidity control. When the cooling and heating temperature setpoint is satisfied and there is a call for dehumidification, maximum dehumidification is initiated by energizing the fan at its “fan only” setting, energizing the pump request, engergizing the 45 second proof-of-flow timer, energizing the hot gas reheat solenoid valve, energizing the compressor at maximum cooling, and energizing the fan at the dehumidification setting. When the room humidity conditions are satisfied, the compressor will shut off and the fan will operate according to its “fan only” setting when enabled for continuous fan operation. If fan cycling is enabled, the fan will turn off, once room humidity conditions are satisfied.
   - **Simplified Dehumidification –** Uses a 3-stage thermostat and air flow management to optimize unit capacity and fan speed for maximum latent capacity while decreasing room humidity levels. On a call for cooling, the fan will energize at its “fan only” setting, the pump request will energize, the 45 second flow timer will start, after the flow, compressor minimum off, and random startup timers are expired, the compressor will start at stage 1 cooling and the fan will energize at its dehumidification setting. If the room setpoint temperature is still not satisfied, the fan will be energized at the stage 1 cooling settings. If the room setpoint temperature is still not satisfied, the compressor and fan will operate at the stage 2 cooling settings. When the room temperature conditions are satisfied, the compressor will shut off and the fan will operate according to its “fan only” setting when enabled for continuous fan operation. If fan cycling is enabled, the fan will turn off, once room setpoint conditions are satisfied.
   - **Humidistat Controlled Dehumidification –** Uses a humidistat and 2-stage thermostat to control room humidity levels. On a call for dehumidification, the fan will energize at its “fan only” setting, the pump request will energize, the 45 second flow timer will start, after the flow, compressor minimum off, and random startup timers are expired, the compressor will start at stage 1 cooling and the fan will energize at its dehumidification setting. If the room setpoint temperature is not satisfied, the fan will be energized at the stage 1 cooling settings. If the room setpoint temperature is still not satisfied, the compressor and fan will operate at the stage 2 cooling settings. When the room temperature and humidity conditions are satisfied, the compressor will shut off and the fan will operate according to its “fan only” setting when enabled for continuous fan operation. If fan cycling is enabled, the fan will turn off once room setpoint conditions are satisfied.
   - D**ehumidification Only –** Uses a humidistat in the cooling only mode. On a call for dehumidification, the fan will energize at its “fan only” setting, the pump request will energize, the 45 second flow timer will start, after the flow, compressor minimum off, and random startup timers are expired, the compressor will start at stage 1 cooling and the fan will energize at its dehumidification setting. Room temperature conditions are not monitored or maintained. The unit only responds to a call for dehumidification. When the room humidity conditions are satisfied, the compressor will shut off and the fan will operate according to its “fan only” setting when enabled for continuous fan operation. If fan cycling is enabled, the fan will turn off once room setpoint conditions are satisfied.

- **Heating Mode –** On a call for heating, the fan will energize at its "fan only" setting, the pump request will energize, the 45 second flow timer will start, after the flow, compressor minimum off, and random startup timers are expired, the compressor and fan will start at stage 1 heating settings; the reversing valve shall energize 5 seconds after the compressor turns on. If room setpoint conditions are not satisfied, the fan will operate at stage 2 heating settings. When the room setpoint conditions are satisfied, the compressor will shut off and the fan will operate according to its “fan only” setting when enabled for continuous fan operation. If fan cycling is enabled, the fan will turn off, once room setpoint conditions are satisfied.

- **Boilerless Electric Heat Mode –** When the entering water temperature is below setpoint, the compressor will not be allowed to operate. On a call for heating, stage 1 electric heat will be energized and the fan will start at its electric heat setting. For units equipped with 2 stages of electric heat, if room setpoint conditions are not satisfied, the second stage of electric heat will be energized and the fan will continue to operate at its electric heat setting. When the room setpoint conditions are satisfied, electric heat will be de-energized and the fan will continue to operate at its "fan only" setting when enabled, for continuous fan operation. If fan cycling is enabled, the fan will turn off after 45 seconds once room setpoint conditions are satisfied.
- S**upplemental Electric Heat Mode –** On a call for heating, the fan will energize at its "fan only" setting, the pump request will energize, the 45 second flow timer will start. After the flow, compressor minimum off, and random startup timers are expired, the compressor and fan will start at stage 1 heating settings; the reversing valve shall energize 5 seconds after the compressor turns on. If room setpoint conditions are not satisfied, the fan will operate at stage 2 heating settings. If room setpoint conditions are still not satisfied, the compressor will continue to operate and stage 1 electric heat will be energized and the fan will operate at its electric heat setting. For units equipped with 2 stages of electric heat, if room setpoint conditions are still not satisfied, the second stage of electric heat will be energized and the fan will continue to operate at its electric heat setting. When the room setpoint conditions are satisfied, electric heat will be de-energized allowing the compressor to remain on if necessary to maintain room setpoint conditions. The fan will operate according to its "fan only" setting when enabled, for continuous fan operation. If fan cycling is enabled, the fan will turn off once room setpoint conditions are satisfied.
- **Primary Electric Heat Mode –** On a call for heating, stage 1 electric heat will be energized and the fan will start at its electric heat setting. For units equipped with 2 stages of electric heat, if room setpoint conditions are not satisfied, the second stage of electric heat will be energized and the fan will continue to operate at its electric heat setting. When the room setpoint conditions are satisfied, electric heat will be de-energized and the fan will continue to operate at its "fan only" setting when enabled, for continuous fan operation. If fan cycling is enabled, the fan will turn off after 45 seconds once room setpoint conditions are satisfied.
- **Emergency Electric Heat Mode –** A 24v control signal from the thermostat will initiate a call for stage 1 or stage 2 electric heat. The compressor will not operate and the fan will start at its electric heat setting.
- **Occupied Mode –** The MicroTech III SmartSource unit controller will manage occupied and unoccupied modes of operation. The occupancy mode can be established by a BACnet or LonWorks communication signal, from a room sensor equipped with "Occupied/ Unoccupied" mode functions, or a thermostat equipped with an "Occupied/Unoccupied" mode switch. When in the occupied mode, the unit will be controlled to its occupied setpoint conditions. The occupancy state will be displayed on sensors equipped with "Occupied/ Unoccupied" mode functions and annunciation capabilities.
- **Unoccupied Mode –** When operating in the unoccupied mode, the unit will be controlled to its unoccupied setpoint conditions and the fan will cycle according to a call for cooling, dehumidification or heating. A simple "grounded" signal between terminals U and C on the MicroTech III SmartSource unit controller will place the unit into the unoccupied mode for night setback operation. The occupancy state will be displayed on sensors equipped with "Occupied/Unoccupied" mode functions and annunciation capabilities.
- **Override Mode –** A momentary (4 to 9 seconds) press of the "Override" button on the thermostat or room sensor during the unoccupied mode will cause the unit to operate in the occupied mode for two hours, for after-hours heating, cooling or dehumidification. "OVERRIDE" will be displayed on sensors equipped with override button and annunciation capabilities.
- **"Energy Save" Bypass Mode –** BACnet or LonWorks units can receive a signal from the Building Automation System (BAS) to initiate the energy savings mode. This mode is typically initiated by the BAS with smart grid technologies to save energy. The savings is driven by reducing peak electrical demand for the building. Once initiated, the MicroTech III SmartSource unit controller will reset its effective setpoint to minimize the stage of compressor operation. "E-SAVE" will be displayed on sensors equipped with bypass mode annunciation capabilities.
- **Motorized Water Valve or Pump Start –** When there is a call for cooling, dehumidification or heating, the MicroTech III SmartSource unit controller will energize its IV/PR (H8) terminal to open the motorized water valve or start the loop pump 45 seconds prior to starting the compressor. The IV/ PR (H8) terminal may be "daisy chained" between 200 units.

Unit Protections & LED Fault Status Annunciation

Refrigerant Circuit High Pressure Protection

A normally closed high (compressor discharge) pressure switch is used in SmartSource units to help protect the refrigerant circuit from excessively high pressure. The controller will monitor this switch.

Note: *Due to the method of sensing the HP switch, the true state cannot be determined unless the compressor output is active.*

Refrigerant Circuit Low Pressure Protection

A normally closed low (compressor suction) refrigerant pressure switch is used in SmartSource units to help protect the refrigerant circuit from excessively low refrigerant pressure. The controller will monitor the switch, when the low-pressure switch contacts are open for more than the low-pressure time delay, default is 30 seconds, the controller will go into the low-pressure fault mode.

Condensate Overflow Sensor (Cooling & Dehumidification Modes Only)

The controller is designed to sense when condensate water levels in the drain pan become excessively high. When high condensate water levels are detected during cooling or dehumidification mode, the controller will go into condensate overflow warning mode.

- No condensate overflow warnings will occur when the unit is running in heating modes, thus allowing the unit to heat with high condensate water levels.
- The fan and pump will operate normally during the condensate overflow fault mode.

Heat Exchanger Low Temperature Protection

The Suction Line Temperature sensor is located on the suction line of the compressor and is used to help protect the unit from excessively low water coil and air coil temperatures.

- The control module will monitor the SLT sensor and if the refrigerant temperature drops below the low temperature limit set point, the controller will go into the low temperature fault mode.

The controller is programmed for different responses if a low temperature fault is detected during heating or cooling modes.

- Low Refrigerant Temperature Protection in heating mode
- Low Refrigerant Temperature Protection in cooling mode

Low Water Temperature Protection

There are two versions of low water temperature protection,

1. Low Entering Water Temperature protection or;
2. Low Leaving Water Temperature protection.

Emergency Shutdown

The controller will be in remote shutdown when the emergency shutdown contact closes to ground. Remote shutdown is provided so that when properly connected to a water loop controller or remote switch, the emergency shutdown input can be used to shut down the water source heat pump.

Low Voltage (Brownout) Protection

The Baseboard controller module will monitor the 24 volt power input supplied to the board. If a low voltage condition is detected the control module will shut down the unit to protect electrical components from low line voltage conditions.

- **Electrical Characteristics**
  - Line voltage feeds the primary side of the 24 volt transformer whose secondary output supplies power to the controls.
  - When the line voltage drops, the transformer output voltage drops a corresponding amount.
  - The Baseboard control module monitors the supply voltage from the transformer and after calibration will detect low line voltage conditions
- **Low Voltage Calibration Process**
  - The Low Voltage Calibration process is first performed at the factory, and results in a Brownout Reference set point that will protect the unit under normal operating conditions in the field.

Note: *The Brownout Reference set point may have to be recalibrated when the unit is installed if the supply voltage in the building is low.*

- **Low Voltage Protection Control Sequence**
  - When the line voltage drops below 80% of the unit nameplate rated value, the controller senses the lower 24 volt supply voltage.

Intelligent Alarm Reset

This feature applies to faults that do not clear automatically. It is used to minimize nuisance trips of automatic lockouts caused by temporary conditions that might inhibit the unit from performing normal functions.

- When an Intelligent Reset alarm occurs, it is counted and the alarm is cleared when the condition returns to normal. If the alarm occurs two more (for a total of 3) times within a 24-hour period, the heat pump remains off (locked out) until the alarm is manually cleared. The control board is reset by a short interruption of unit power, or remotely reset by pressing the timed override button for more than 10 seconds, or through the service tool, or over the network.
- At the end of the 24 hour period, all counts for Intelligent Reset alarms are reset to zero.

Remote Reset of Automatic Lockouts

The Remote Reset feature provides the means to remotely reset automatic lockouts. There are (3) means to reset an automatic lockout condition:

- Using the thermostat create 2 demands for capacity within 30 seconds.
- Press the Room Sensor or Thermostat Timed Override/ Reset Button for more than 10 seconds
- Turn the unit power off

When the cause of the fault condition has been cleared, and the unit transitions from not requiring any capacity to needing any capacity twice within 30 seconds (accomplished by user manipulation of the Heat/Cool/Auto/Off switch on the thermostat), an alarm reset equivalent to a tenant override button reset is generated. The intelligent reset counter and the 24 hour timer are cleared when this type of alarm reset is generated.

Note: *This feature only applies to thermostat controlled systems.*

For room sensor controlled units, pressing the “Override” or “Reset” button for more than 10 seconds will apply a ground signal to the tenant override in(screw terminal connection at TB1 pin 4) will clear the lockout alarm once the cause of the fault condition has been cleared.

A unit power cycle can also be used to clear an automatic lockout if the conditions causing the fault have been cleared.

Table 2: MicroTech III SmartSource unit controller fault & status LED's

Description	Type	Yellow	Green	Red
IO Expansion Communication Fail	Fault	ON	Flash	Flash
Invalid Configuration	Fault	Flash	Flash	OFF
Low Voltage Brownout	Fault	OFF	Flash	OFF
Emergency Shutdown	Mode	OFF	Flash	OFF
Compressor High Pressure	Fault	OFF	OFF	Flash
Compressor Low Pressure	Fault	OFF	OFF	ON
Compressor Suction Temp Sensor Fail	Fault	Flash	Flash	ON
Compressor Low Suction Temp	Fault	Flash	OFF	OFF
Freeze Fault Detect	Fault	Flash	OFF	Flash
Room Temp Sensor Fail (Room Sensor Control Only)	Fault	Flash	Flash	ON
Leaving Water Temp Sensor Fail	Fault	Flash	Flash	ON
Condensate Overflow	Fault	ON	OFF	OFF
Serial EEPROM Corrupted	Fault	ON	ON	ON
Waterside Economizer Low Temp Cutout (WSE Control & Call for Cooling Only)	Mode	Flash	ON	Flash
Service Test Mode Enabled	Mode	Flash	Flash	Flash
Unoccupied Mode	Mode	ON	ON	OFF
Occupied, Bypass, Standby, or Tenant Override Modes	Mode	OFF	ON	OFF

Note: *Mode/faults are listed in order of priority.*

Table 3: I/O expansion module fault & status LED's

Description	Type	Yellow	Green	Red
Baseboard Communication Fail	Fault	Flash	OFF	Flash
Entering Water Temp Sensor Fail (Boilerless Electric Heat or Waterside Economizer Only)	Fault	ON	OFF	Flash
Low Entering Water Temperature (No Display On Boilerless Electric Heat)	Fault	OFF	ON	Flash
Fan is OFF	Mode	OFF	ON	OFF
Fan Running at Low Speed (0 to 33%) Duty Cycle	Mode	OFF	Flash	OFF
Fan Running at Medium Speed (34 to 66%) Duty Cycle	Mode	ON	Flash	OFF
Fan Running at High Speed (67 to 100%) Duty Cycle	Mode	Flash	Flash	OFF

Table 4: Fault recovery and reset

Fault Description	Auto Recovery	Tenant Override Button Reset	Network Reset
I/O Expansion Communication Fail	Yes	No	No
Invalid Configuration	No	No	No
Low Voltage Brownout	Yes	No	Yes
All Sensor Failures	No	No	Yes
Compressor High Pressure	No	Yes	Yes
Compressor Low Pressure	Yes[1]	Yes	Yes
Compressor Low Suction Temp or Freeze Fault Detect (In Heating Mode)	Yes[1]	Yes	Yes
Compressor Low Suction Temp or Freeze Fault Detect (In Cooling or Dehumidification Modes)	No	Yes	Yes
Condensate Overflow	Yes	No	Yes
Low Entering Water Temp	Yes	No	No
Serial EEPROM Corrupted	No	No	No
Waterside Economizer Low Temp Cutout	Yes	No	No

Note: [1] *Indicates auto recover is subject to intelligent alarm reset. Alarm auto recovers on first two occurrences, locked out on third within 24 hour period.*

See "Intelligent Alarm Reset" section for further details.

Table 5: Priority Level of Faults and Modes

Priority Level	Mode or Fault
1	I/O Expansion Communication Fail
2	Invalid Configuration
3	Low Voltage Brownout
4	Emergency Shutdown Mode
5	Compressor High Pressure
6	Compressor Low Pressure
7	Compressor Suction Temp Sensor Fail
8	Compressor Low Suction Temp
9	Freeze Fault
10	Room Temp Sensor Fail
11	Entering Water Temp Sensor Fail
12	Leaving Water Temp Sensor Fail
13	Condensate Overflow
14	Low Entering Water Temp
15	Serial EEPROM Corrupted
16	Waterside Economizer Low Temp Cutout
17	Service Test Mode

Table 6: Room sensor status LED

LED ON Time (Sec.)	LED OFF Time (Sec.)	Operating Mode
0.5	0.5	Alarm Condition or Network "Wink" Operation Active
0.0	Continually	Tenant Override Is Active
0.5	5.5	Unoccupied Mode
5.5	0.5	Standby Mode
Continually	0.0	Occupied or Bypass Modes

MicroTech III SmartSource Unit Controller with LonWorks Communication Module

Each Daikin McQuay water source heat pump can be equipped with a LonWorks communication module that is LonMark 3.4 certified. The controller is microprocessor-based and is designed to communicate over a LonWorks communications network. It can be factory or field-installed.

The unit controller is programmed and tested with all the logic required to monitor and control the unit. An optional wall sensor may be used with the communication module to provide limited local control of the Water Source Heat Pump. The unit controller monitors water and air temperatures and passes information to the communication module. The module communicates with the BAS, to provide network control of the Water Source Heat Pump.

Figure 6: MicroTech III LonWorks snap-in communication module

The MicroTech III SmartSource unit controller with communication module includes a unit-mounted return air, discharge air and leaving water temperature sensor. Wall mounted temperature sensors include setpoint adjustment and tenant override. The user has the capability of substituting the wall sensor with a duct-mounted return air sensor. MicroTech III SmartSource unit controller with LonWorks Communication Module orchestrates the following unit operations:

- Enable heating and cooling to maintain setpoint based on a room sensor
- Enable fan and compressor operation
- Monitors all equipment protection controls
- Monitors room and discharge air temperatures
- Monitors leaving water temperature
- Relays status of all vital unit functions

The MicroTech III SmartSource unit controller with communication module includes:

- A Return Air Temperature sensor (RAT) (factory provided, field-installed)
- A Discharge Air Temperature sensor (DAT) (factory provided, field-installed)
- A Leaving Water Temperature sensor (LWT)

Note: *Refer to IM 956-X for details to install (RAT), (DAT) and (LWT) sensors.*

The communication module provides access to setpoints for operational control

Available wall sensors include:

- Digitally Adjustable with Temperature & Humidity Display
- Adjustable Cool/Warm with Occupancy Switch
- Adjustable 55°F to 95°F
- Adjustable -3°F to +3°F (-1.5°C to +1.5°C)
- Basic Sensor

MicroTech III SmartSource Unit Controller with BACnet Communication Module

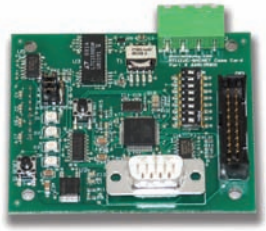
Daikin McQuay water source heat pumps are available with a BACnet MS/TP communication module that is designed to communicate over a BACnet MS/TP communications network to a building automation system (BAS). It can be factory or field-installed.

The unit controller is programmed and tested with all the logic required to monitor and control the unit. An optional wall sensor may be used with the communication module to provide limited local control of the water source heat pump. The unit controller monitors water and air temperatures and passes information to the communication module. The module communicates with the BAS, to provide network control of the water source heat pump.

The module makes operational data and commands available on a communications network using BACnet objects and properties:

- The network cable is a shielded twisted-pair cable
- Network communications run up to 76.8 Kbps
- DIP switches on the controller enable the MS/TP MAC address to be set in the range 0-127
- Four green status LEDs on the communication module indicate communication activity on the MS/TP communication network and with the unit controller

Figure 7: MicroTech III BACnet snap-in communication module



MicroTech III SmartSource unit controller with BACnet MS/TP Communication Module orchestrates the following unit operations:

- Enable heating and cooling to maintain setpoint based on a room sensor
- Enable fan and compressor operation
- Monitors all equipment protection controls
- Monitors room and discharge air temperatures
- Monitors leaving water temperature
- Relays status of all vital unit functions

The MicroTech III SmartSource unit controller with communication module includes:

- A Return Air Temperature sensor (RAT) (factory provided, field-installed)
- A Discharge Air Temperature sensor (DAT) (factory provided, field-installed)
- A Leaving Water Temperature sensor (LWT)

Note: *Refer to IM 956-X for details to install (RAT), (DAT) and (LWT) sensors.*

The communication module provides access to setpoints for operational control.

Available wall sensors include:

- Digitally Adjustable with Temperature & Humidity Display
- Adjustable Cool/Warm with Occupancy Switch
- Adjustable 55°F to 95°F
- Adjustable -3°F to +3°F (-1.5°C to +1.5°C)
- Basic Sensor

Hoses, Hose Kits and Shutoff Ball Valves for SmartSource Water Source Heat Pumps

Daikin McQuay sells a variety of flexible supply, return and condensate hoses and hose assemblies for connecting its water source heat pumps to a building's hard piping system.

Both standard and fire-rated hoses are available.

Figure 8: Flexible, steel braided supply and return hoses

Supply and return hoses have a swivel fitting at one end to facilitate removal of the unit for replacement or service.

Standard supply and return fire-rated hoses have either a thermoplastic rubber or synthetic polymer core with a braided covering of stainless steel. Fittings are either plated steel or brass.

Table 7: Available fire rated supply and return hoses

Description	Connection Size (O.D.)	Length
Supply and Return Hoses	1/2"	24"
		36"
	3/4"	24"
		36"
	1"	24"
		36"

Shutoff Ball Valves with Memory Stop

Constructed of brass and rated at 400 psig (2758 kPa) maximum working pressure. Valves have a built-in adjustable memory stop to eliminate rebalancing. Valves have FPT connections on both ends for connection to the water hose and to the field piping.

Figure 9: Shutoff ball valve with memory stop

2 & 3-Way Motorized Water Valves

2-way valves are used for variable pumping applications when more than one unit is installed on a common loop. These valves are also used to conserve water when used for ground water applications.

3-way valves are used for constant flow applications or installed at the end of a variable flow branch piping run to maintain minimum flow conditions.

Figure 10: 2-way and 3-way motorized water valves

Table 8: Available motorized valves

Type	Size	Connection
2-Way Motorized	1/2"	Sweat
	3/4"	Sweat
	1"	Sweat
	1/2"	NPT
	3/4"	NPT
	1"	NPT
Waterside Economizer Valves		
3-Way Motorized	1/2"	Sweat
	3/4"	Sweat
	1"	Sweat

Supply and Return Hose Kits

Figure 11: Supply and return hoses

Supply Hose - Combination Ball Valve & Strainer

The supply valve body is a combination Y-strainer full port shut-off valve and union for use in HVAC systems. Strainers are furnished with a 20 mesh stainless steel screen, hose end drain (blow down) valve for purging, one pressure/temperature port for commissioning, and one plugged bypass port. Three additional 1/4″ taps are plugged and available for accessories when specified. A variety of pipe connections are available on both the fixed and union ends. Standard end connections are female pipe thread.

Supply Hose Construction

Body: Brass C37000

Ball: Full Port Chrome Plated

Ball Stem: Teflon®

Stem: Explosion Proof

O-Rings: EPDM

Strainer: 20 Mesh Stainless Steel

Bypass Port Tap:

- 1/2" NPTF for sizes 1/2", 3/4" and 1"
- 3/4" NPTF for sizes 1-1/4", 1-1/2"

Maximum Working Pressure: 400 psig

Maximum Operating Temp: -4°F to 250°F

Return Hose - Ball Valve with Circuit Sentry™

The Circuit Sentry is a combination automatic flow limiting valve, commissioning valve, and shut-off valve for use in HVAC systems. Valves are furnished with a removable flow limiting diaphragm cartridge to allow easy access for inspection, cleaning, or flow rate changes without disturbing the piping. Two 1/4" pressure/temperature ports and a hanging ID tag for commissioning are standard.

Return Hose Construction

Body: Brass C37710

Ball: Chrome Plated Brass C37710

Ball Seal: EPDM

Stem: Blow-Out Proof

O-Rings: EPDM

Cartridge: Brass C36000

Diaphragm: Reinforced EPDM

Spring: Stainless Steel

Maximum Working Pressure: 400 psig

Maximum Operating Temp: -4°F to 250°F

Control Range: 2 psi to 60 psi

Accuracy: +/- 5%

Table 9: Available hose kits

Description	Connection Size (O.D.)	GPM	Length
Hose Kit	1/2"	0.5	24" & 36"
		1.0	
		1.5	
		2.0	
		2.5	
		3.0	
		3.5	
		4.0	
		4.5	
		5.0	
		5.5	
		6.0	
	3/4"	3.0	
		3.5	
		4.0	
		4.5	
		5.0	
		5.5	
		6.0	
		6.5	
		7.0	
		7.5	
		8.0	
		9.0	
		10.0	
		11.0	
		12.0	
		13.0	
		15.0	
	1"	8.0	
		9.0	
		10.0	
		11.0	
		12.0	
		13.0	
		15.0	
		18.0	

Accessories

Condensate Hose Kits

Horizontal ceiling units require an external condensate hose. These can be ordered as the long clear plastic type with the necessary clamps and a MPT hose fittings, or fire rated type for connection to the FPT field piping.

Table 10: Available condensate hose kits

Description	Size & Nominal Length
Hose, Fire Rated Condensate	1" FPT x 24"
Hose, Fire Rated Condensate	1" FPT x 36"
Hose, Fire Rated Condensate	3/4" FPT x 24"
Hose, Fire Rated Condensate	3/4" FPT x 36"
Hose, Plastic Condensate w/Fittings	3/4" x 30"
Hose, Plastic Condensate w/Fittings	3/4" x 36"
Hose, Plastic Condensate	1" x 30"
Hose, Plastic Condensate	1-1/4" x 38"

Electric Duct Heaters (Horizontal Units)

Horizontal units utilize a (field-installed) external duct-mounted electric heater. With boilerless electric heat, if the EWT is above the set point of the EWT thermostat, a switch is located in the control box to activate electric heat in the event of a compressor failure. With supplemental electric heat control the compressor and heater operate simultaneously, activated by a wall thermostat. “Emergency heat” is activated by a 24V signal for external duct-mounted electric heat. This function is activated from the wall thermostat via the “Emergency Heat” switch.

Figure 12: External electric heater (field-installed)

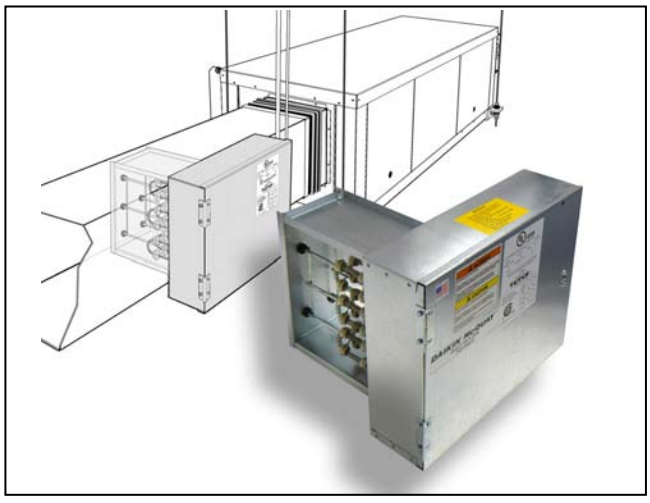


Table 11: Available electric duct heaters

Description	kW	Voltage/Hz/Phase	Unit Size
Electric Duct Heater Kit	5	208-240/60/1	024-032
		208-240/60/3	
		277/60/1	
		480/60/3	
	10	208-240/60/1	
		208-240/60/3	
		277/60/1	
		480/60/3	
	5	208-240/60/1	036-072
		208-240/60/3	
		277/60/1	
		480/60/3	
	10	208-240/60/1	
		208-240/60/3	
		277/60/1	
		480/60/3	
	15	208-230/60/1	
		208-230/60/3	
		460/60/3	
	20	208-230/60/1	
		208-230/60/3	
		460/60/3	

Filters

A 2" or 4" filter rack is available as a field-installed accessory to accept a Merv 8 or Merv 13 filter, for applications requiring optimal Indoor Air Quality (IAQ). The high Merv filter rack is provided with gaskets between it and the cabinet and along the edge of the tool-less removable door. The gaskets maintain the leakage rate below 4 CFM per square foot of filter area at .5" ESP.

Thermostats

Daikin-McQuay has a line of thermostats and thermostat accessories to serve the SmartSource line of water source heat pumps.

Programmable Touch Screen for Smart Dehumidification or Waterside Economizer Control

With advanced capabilities to control Smart Dehumidification or the Waterside Economizer, the Programmable Touch Screen thermostat offers precise temperature and humidity sensing and control. When combined with a multiple-stage heat pump and electric heat control this thermostat provides the ultimate in thermostatic control with a +/- 1°F accuracy. It's large, 12-square-inch blue backlight display is easy to see and easy to program in low light conditions. Enhanced Smart Dehumidification fan speed control combined with 2-stage compressor control allows for maximum dehumidification capability. An exclusive Cool Saving feature saves energy during peak cooling demand periods. Remote indoor or outdoor temperature sensing is also available with the accessory remote sensors.

Thermostats and Remote Sensors

Remote Sensors for the Programmable Touch Screen

Outdoor Sensor

Indoor Sensor

Remote indoor temperature sensor provides the ability to measure room temperature remote from the thermostat location. The remote outdoor temperature sensor provides the ability to display the outdoor temperature at the thermostat.

Programmable and Non-Programmable Thermostats

Programmable

Non-Programmable

For 2-stage heating, 2-stage cooling and boilerless electric heat control, both the Programmable and Non-Programmable thermostats provide simple control capabilities. With alarm fault clearing, a timed override button and unit status LED, these thermostats provide an easy interface to the MicroTech III SmartSource controller for both automatic and manual changeover capabilities. Each can be connected to the accessory remote temperature sensor.

Remote Room Sensor for the Programmable and Non-Programmable Thermostats

The remote indoor temperature sensor provides the ability to measure room temperature remote from the thermostat location.

MicroTech III Water Source Heat Pump Room Temperature Sensors

A MicroTech III Water Source Heat Pump Room Temperature Sensor is required when connecting a SmartSource unit to a Building Automation System (BAS) using either the LonWorks or BACnet Communication Module. All MicroTech III Water Source Heat Pump Room Temperature Sensors provide electronic sensing of the room temperature for multiple-stage cooling and heating control, electric heat control, unit status annunciation, timed tenant override, and fault clearing capabilities.

Accessories

Digitally Adjustable Sensor with Temperature and Humidity Display

Specifically designed for Smart Dehumidification or Waterside Economizer applications, the Digitally Adjustable sensor provides the ultimate of temperature and humidity control and display, simple user interface, alarm annunciation, and alarm reset. The easy to read LCD clearly identifies the system operating mode including Smart Dehumidification (Dehum), occupied/unoccupied mode, fan operation, unit status, timed override status, alarm annunciation, and energy savings mode through a series of recognizable icons. Tactile response buttons initiate adjustments for temperature and humidity set points, system mode, fan mode, occupancy, tenant override and fault reset functions. The large numeric LCD will display space temperature (°F or °C) and space humidity (%RH) along with the corresponding setpoint conditions. The Digitally Adjustable Sensor is required for BACnet or LonWorks applications. However, it can also be installed as a standalone sensor using factory default set points.

Adjustable Cool/Warm Sensor with Occupancy Switch

The Adjustable Cool/Warm Sensor with Occupancy Switch can be used for 2-stage heating, 2-stage cooling, and 2-stage electric heat applications. Unit status is provided through a flashing LED located on the thermostat while timed tenant override and fault reset are provided through the override button. Changing the system mode, fan mode and occupancy is easily accomplished through the slider switches.

Adjustable 55° to 95°F or +/- 3°F Sensors

Adjustable 55º to 95ºF

+/- 3ºF or +/-1.5°C Sensor

The adjustable 55° to 95°F or +/- 3°F or +/-1.5°C sensors can be used for 2-stage heating, 2-stage cooling, and 2-stage electric heat applications. Electric heat options include boilerless, supplemental, and primary heat capabilities. Unit status is provided through a flashing LED located on the sensor while timed tenant override and fault reset are provided through the override button. Changing the system or fan mode is easily accomplished through the slider switches.

Basic Sensor

The basic sensor provides simple room temperature sensing for 2-stage heating, 2-stage cooling, and 2-stage electric heat applications. Electric heat options include boilerless, supplemental, and primary heat capabilities. Unit status is provided through a flashing LED located on the sensor while timed tenant override and fault reset are provided through the override button.

Thermostats & Remote Sensors used with GT 2-Stage Units		Thermostats			Remote Sensors for Thermostat Applications		
		Programmable Touch-screen **Part No.** 910121750	**Non-Programmable** **Part No.** 910121746	**Programmable** **Part No.** 910121748	**Remote Room Sensor** Used with Thermostats 910121746 & 910121748 **Part No.** 667720401	**Remote Room Sensor** Used with Thermostat 910121750 **Part No.** 910129095	**Outdoor Air Sensor** Used with Thermostat 910121750 **Part No.** 910129096
Feature							
Display	Room Temperature & Setpoint	●	●	●			
	Room Humidity & Setpoint	●					
Changeover	Manual	●	●	●			
	Automatic	●	●	●			
Stages	Heating	4	2	2			
	Cooling	3	2	2			
Operating Modes	System	Cool-Off-Heat-Emergency-Auto	Cool-Off-Heat-Auto	Cool-Off-Heat-Auto			
	Fan	On-Auto	On-Auto	On-Auto			
Annunciation	Status LED 5VDC		●	●			
	Alarm Fault LED 24 VAC	●	●	●			
	Service & Alarm Display LCD	●					
Reset	Alarm	Via Touch-screen	Cycle Mode to "OFF" or push ▲▼ for 10 seconds	Cycle Mode to "OFF" or push ▲▼ for 10 seconds			
	Setback Override	Via Touch-screen	Push ▲▼ for 3 seconds	Push ▲▼ for 3 seconds			
Remote Sensors	Indoor Room Temperature	Use 910129095	Use 667720401	Use 667720401	●	●	
	Outdoor Temperature	Use 910129096					●
Application							
Dehumidification	Smart Dehumidification	●✓				●✓	●✓
	Simplified	●				●	●
	Humidistat Controlled	●				●	●
	Dehumidification Only	●				●	●
Electric Heat	Boilerless	●	●	●	●	●	●
	Supplemental	●				●	●
	Primary	●				●	●
	Emergency	●				●	●
Waterside Economizer	3-Way Valve Control	●✓				●✓	●✓

●✓ *= Used with either Smart Dehumidification or Waterside Economizer*

Accessories

Sensors used with GT 2-Stage Units		Room Temperature Sensors				
		Digitally Adjustable With Temperature & Humidity Display for Smart Dehumidification or Waterside Economizer Operation **Part No.** 910121754	**Adjustable Cool/ Warm with Occupancy Switch** **Part No.** 910121753	**Adjustable 55˚F to 95˚F** **Part No.** 669529101	**Adjustable +/- 3ºF or +/-1.5˚C** **Part No.** 669529201	**Basic Sensor** **Part No.** 669529001
Feature						
Setpoint Adjustment		Digitally Adjustable	Cool to Warm	55ºF to 95ºF (13º to 35ºC)	-3º to +3ºF (-1.5º to +1.5ºC	None
Display	Room Temperature & Setpoint	●				
	Room Humidity & Setpoint	●				
Stages	Heating	4	4	4	4	4
	Cooling	3	3	3	3	3
Operating Modes	System	Heat-Cool-Auto-Off-Dehum	Cool-Auto-Heat	Cool-Auto-Heat	Cool-Auto-Heat	
	Fan	Auto-On	Auto-On	Auto-On	Auto-On	
	Occupancy	LCD Display of Occupied-Unoccupied Icon	Occ-Unoc-Off			
Annunciation	Status LED	LCD Display of Unit Status	●	●	●	●
	LCD Alarm Display	LCD Display of Unit Alarm				
Reset	Alarm	Override Reset Button	Override Button	Override Button	Override Button	Override Button
	Setback Override	Override Reset Button	Override Button	Override Button	Override Button	Override Button
Application						
Dehumidification	Smart Dehumidification	●				
	Simplified	●				
	Humidistat Controlled	●				
	Dehumidification Only	●				
Electric Heat	Boilerless	●	●	●	●	●
	Supplemental	●	●	●	●	●
	Primary	●	●	●	●	●
Waterside Economizer	3-Way Valve Control	●	●	●	●	●

Typical Vertical Installation

Unit Location

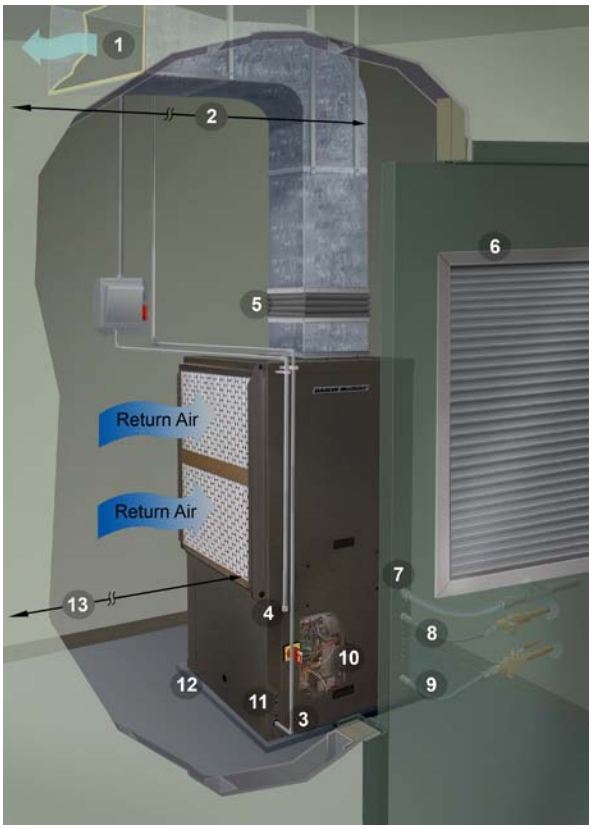
SmartSource vertical water source heat pumps can be installed “free standing” in an equipment room; however, closet installations are more common for the small vertical type units. Generally, the unit is located in the corner of a closet with the non-ducted return air facing 90º to the door and the major access panels facing the door as shown in Figure 13. Alternatively, the unit can have a ducted return air with the opening facing the door and the major access panels facing 90º to the door.

Locate a vertical unit to allow for easy removal of the filter and access panels. Allow a minimum of 18" (46 cm) clearance on each side of the unit for service and maintenance access. Always be sure to leave at least one side of the filter rack unobstructed so that the service personnel will be able to slide the filter out.

Install a field supplied line voltage disconnect for branch circuit protection.

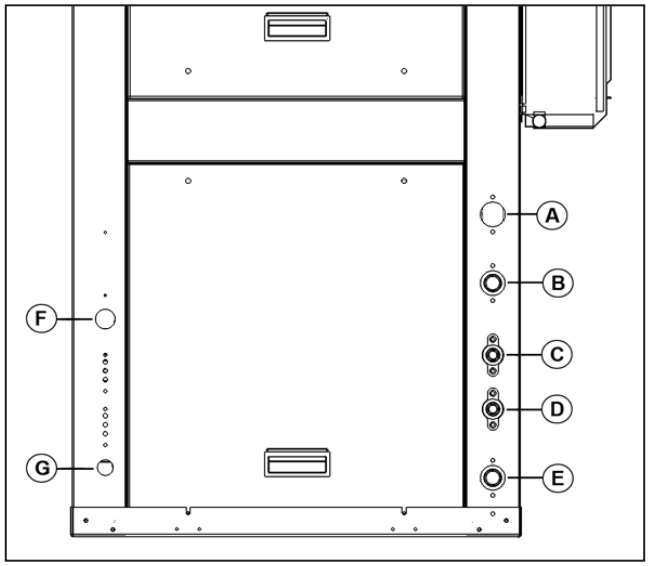
To reduce noise emissions, install a field-provided 1/2 inch thick, isolator pad below the entire base of the vertical unit. The pad should be equal to the overall foot-print size of the unit to provide sound dampening of the unit while in operation.

Figure 13: Typical closet installation - non-ducted application



1. Discharge air
2. Acoustic thermal duct lining - 10 feet
3. Low voltage wiring to unit control box
4. Line voltage disconnect
5. Flexible duct collar
6. Louvered closet door
7. Condensate drain
8. Flexible, braided, stainless steel return hose with flow controller/ball valve with port
9. Flexible, braided, stainless steel supply hose with Y-strainer/ball valve with port
10. Access to unit control box
11. LED annunciator lights indicate unit operation status and faults
12. Full vibration isolation pad between unit and floor
13. Minimum distance between return air duct collar and wall for non-ducted return applications
    - Size 026 – 5 inches
    - Size 032-038 – 6 inches
    - Size 044-049 – 8 inches
    - Size 064-072 – 10 inches

Figure 14: Vertical unit wiring & piping locations



A- Condensate
B- Water return
C- Desuperheater water return (optional)
D- Desuperheater water supply (optional)
E- Water supply
F- Line voltage unit power (electric entrance)
G- Low voltage control Wiring (electric entrance)

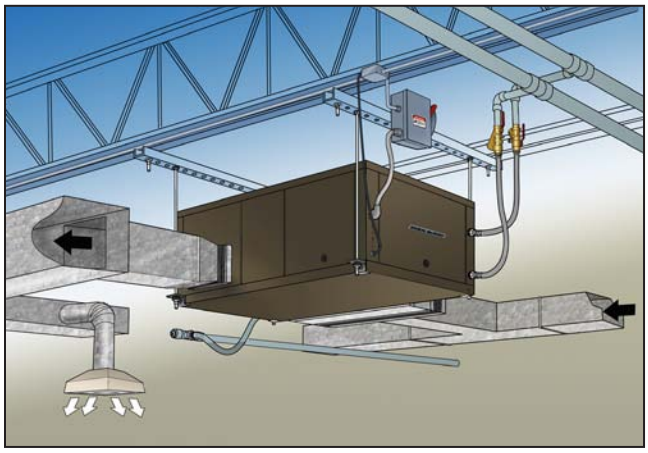
Typical Horizontal Installation

Unit Location

It is important to leave enough space for service personnel to perform maintenance or repair. Locate the horizontal unit to allow for easy removal of the filter and access panels. Allow a minimum of 18" (46 cm) clearance on each side of the unit for service and maintenance access and do not install the unit above any piping. Always be sure to leave at least one side of the filter rack unobstructed so that the service personnel will be able to slide the filter out. Each unit is suspended from the ceiling by four 3/8" threaded rods fastened to the unit by a hanger bracket and rubber isolator. The design should place the unit directly below the structural members so that it is securely anchored.

Avoid installing units directly above spaces where building occupants will reside (e.g. above office desks or classrooms) to reduce the requirement for noise attenuation. Do not place units above high traffic areas because service access may be limited during occupied hours. For example, units are typically installed above the hallway drop ceiling in schools and the supply and return air is routed directly into classrooms. Local code may require fire dampers to be used with this application.

Figure 15: Typical horizontal ceiling installation



Ductwork and Attenuation

Vertical Unit

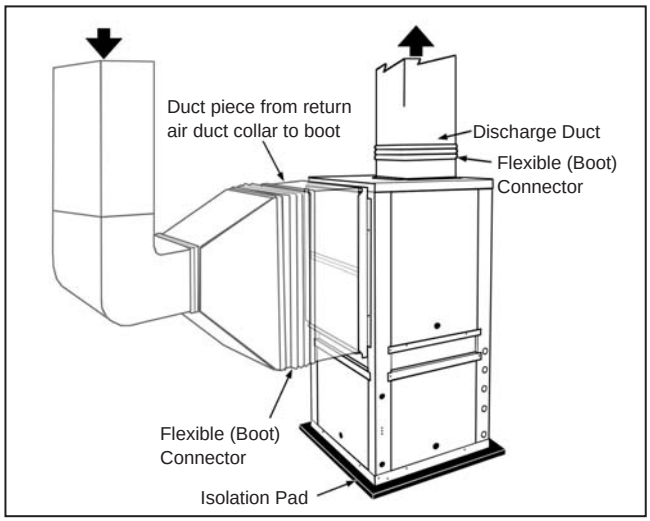
All ductwork should conform to industry standards of good practice as described in ASHRAE Systems Guide.

The discharge duct system will normally consist of a flexible (boot) connector at the unit, a short run of acoustically insulated duct (approximately 10'), an 90° elbow without vanes, and a trunk duct teeing into a branch circuit with discharge diffusers as illustrated in and Figure 18.

Return air ducts can be brought in through a wall grille and then to the unit. The return duct system will normally consist of a flexible connector at the unit and a trunk duct to the return air grille. With metal duct material, the return air duct should be internally lined with acoustic insulation for sound attenuation.

Return air ductwork to the unit requires a 2" (51mm) return air duct collar and filter rack or an optional 4" (102 mm) return air duct collar and filter rack.

Figure 16: Typical installation using ducted return



Horizontal Unit

Ductwork is normally applied to ceiling-mounted heat pumps on the discharge side of the unit. A discharge collar is provided on all horizontal unit models for fastening the ductwork. Use a flexible connector between the discharge collar and the duct transformation to help reduce vibration transmission from the cabinet and to simplify disconnection of the unit from the ceiling ductwork. If return ductwork is to be used, attach a flexible connector to the filter rack collar to help reduce vibration transmission and removal of the unit. Return plenum ducting should be at least 12 inches away from the coil so that the coil is evenly loaded with return air.

As a general recommendation, duct interiors should have an acoustic / thermal lining at least 1/2 inch thick over the entire duct run. For better sound attenuation, line the last five diameters of duct before each register with a one-inch thick sound blanket. Elbows, tees and dampers can create turbulence or distortion in the airflow. Place a straight length of duct, 5 to 10 times the duct width, before the next fitting to smooth out airflow. Diffusers that are located in the bottom of a trunk duct can also produce noise. For this same reason, volume control dampers should be located several duct widths upstream from an air outlet.

Figure 17: Vertical unit duct example

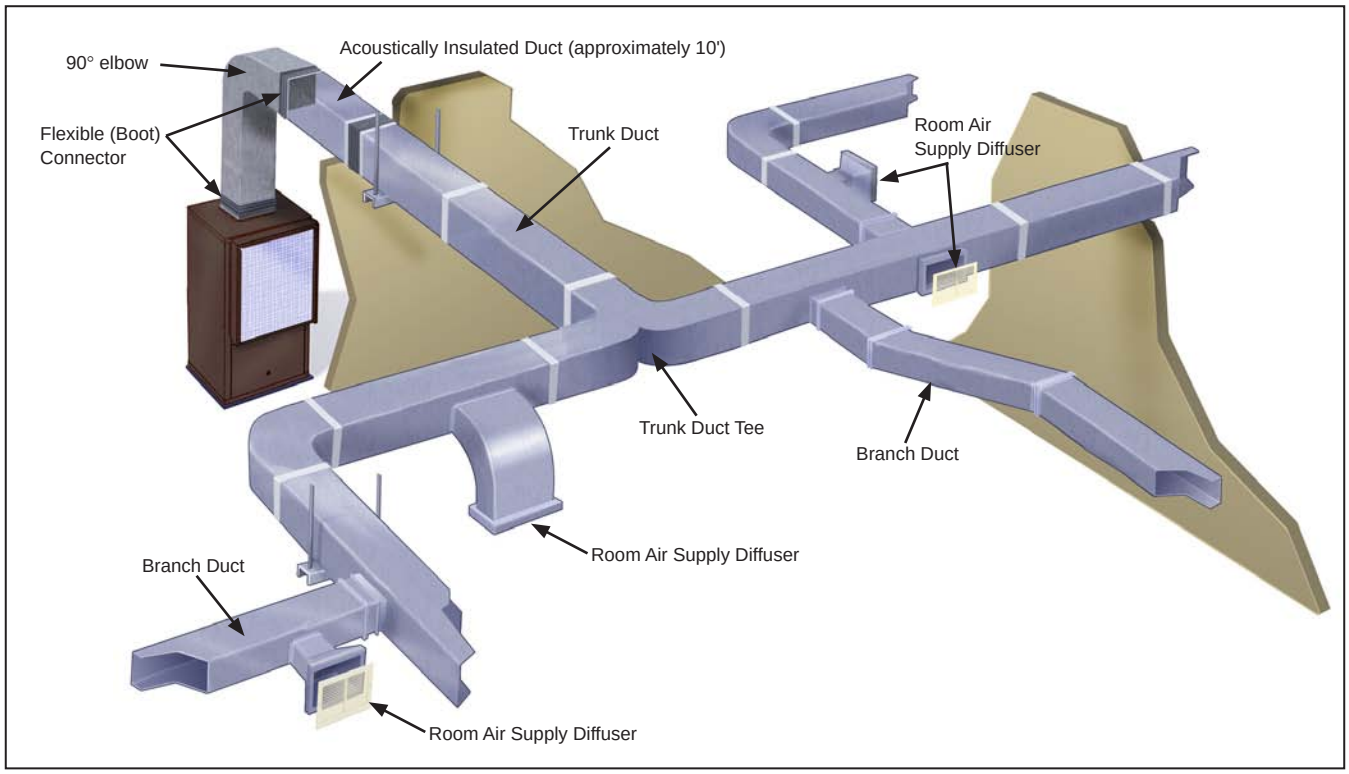
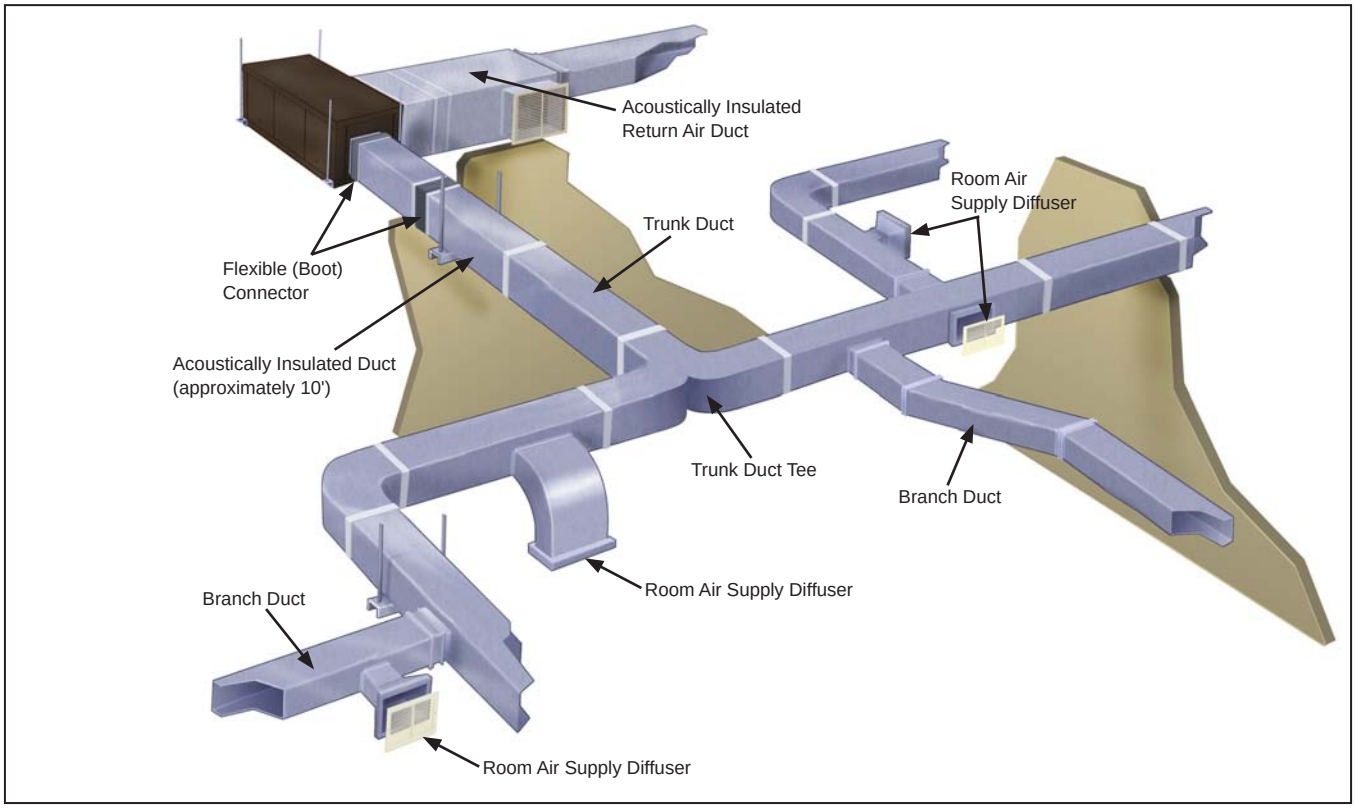


Figure 18: Horizontal unit duct example



Notes:

1. Do not install ducts so that the air flow is counter to fan rotation. If necessary, turn fan section.

2. Transformations and units must be adequately supported so no weight is on the flexible boot connection.

Applications

Piping

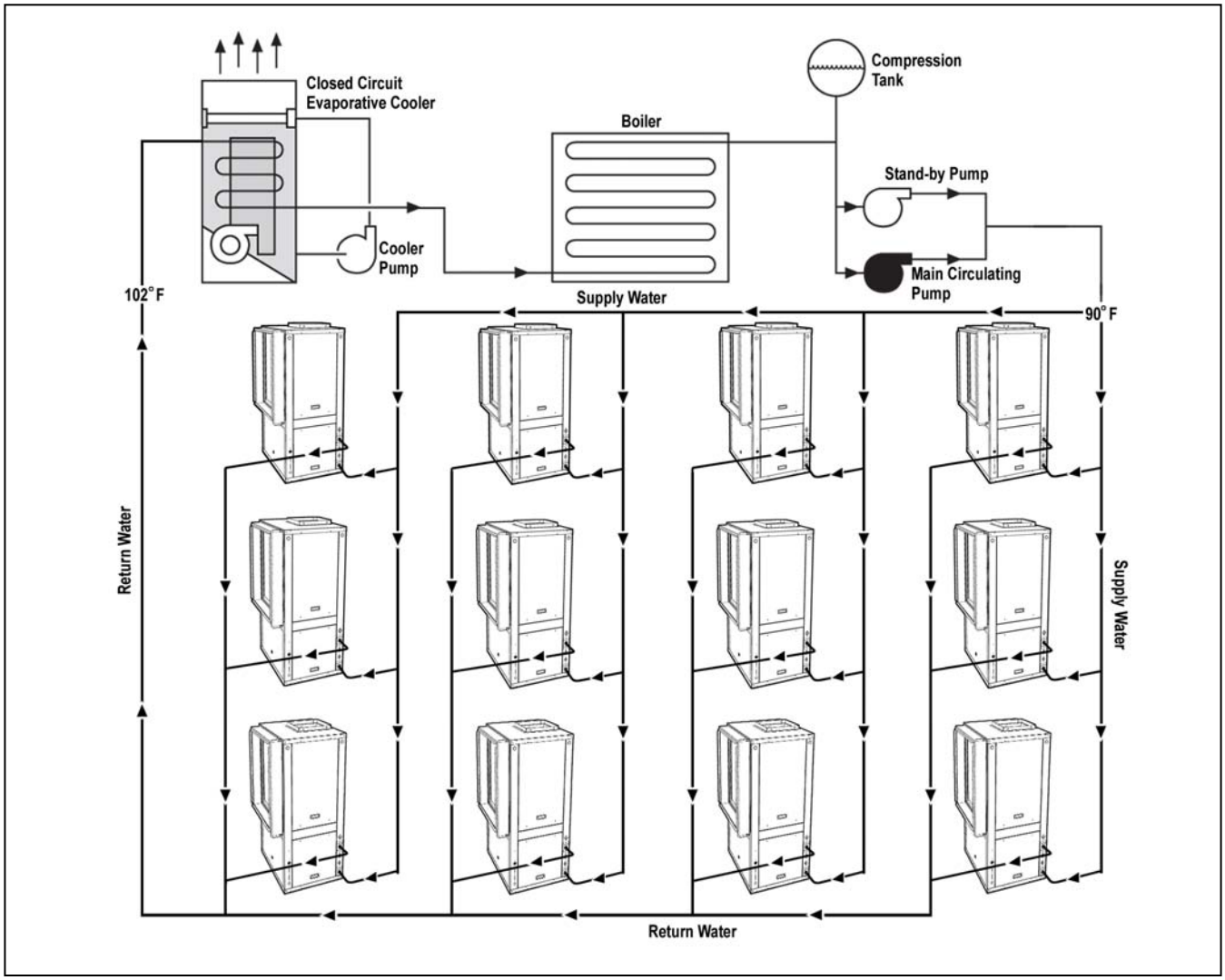
The water source heat pump unit is typically connected to the supply / return piping using a “reverse return” piping system which includes a flow control device so that flow requirements are met for each zone. A short, high pressure “flexible hose” is used to connect the unit to the building’s hard piping and acts as a sound attenuator for both the unit operating noise and hydronic pumping noise. One end of the hose has a swivel fitting to facilitate removal of the unit for replacement or service. Include supply and return shut-off valves in the design to allow removal of a unit without the need to shut down the entire heat pump system. The return valve may be used for balancing and will typically have a “memory stop” so that it can be reopened to the proper position for the flow required. Fixed flow devices are commercially available and can be installed to eliminate the need for memory stop shut off valves. Include Pressure / Temperature ports to allow the service technician to measure water flow and unit operation.

Daikin McQuay has available optional hose kit combinations to better facilitate system flow balancing. These flexible hoses reduce vibration between the unit and the rigid piping system.

Polyolester Oil, commonly know as POE oil is a synthetic oil used in many refrigeration systems. POE oil, if ever in contact with PVC/CPVC will coat the inside wall of PVC/CPVC pipe causing environmental stress fractures.

Although there is no PVC/CPVC piping in this product, please keep this in mind when selecting piping materials for your application, as system failure and property damage could result.

Figure 19: Reverse return piping system



Water System Quality

The cleaning, flushing and chemical treatment of a water source heat pump system is fundamental to efficient operation and the life expectancy of the system.

Potential system problems produced by the use of water fall into three general categories:

1. **Scale formation –** Mineral deposits which result from the crystallization and precipitation of dissolved salts in the water. The deposits form an insulating barrier, reducing the heat transfer rate and impeding the circulation of fluids due to increased pressure drop.
2. **Corrosion –** Decomposition of the metal caused by absorption of gases from the air. Corrosion may occur in any metal component of the system.
3. **Organic growths –** Slime and algae which form under certain environmental conditions, and can reduce the heat transfer rate by forming an insulating coating or can promote corrosion by pitting.

The system water should be evaluated for degrees of impurity, with testing available from independent testing labs, health departments or state agencies.

Table 12 is a list of water characteristics, the potential impurities and their results and the recommended treatment.

Avoiding Potential Problems

As shown in Table 12, all water contains some degree of impurities which may affect the performance of a heat pump system. The use of a cupro-nickel coil can help avoid potential problems. Water flow rates should:

A. Be high enough that the temperature rise through the heat exchanger does not exceed 10° F when operating in the cooling mode.

B. Not exceed 4 GPM per nominal ton. Flow rates that have velocities of 10 feet per second or more may cause pipe erosion and heat exchanger failure.

Table 12: Water impurities, result & recommended water system application

Impurity	Copper Coils	Curpro-nickel Coils	Result	Application	
				Open Recirculating	Closed Recirculating
Calcium & Magnesium Salts (hardness)	Less than 350 ppm	350 ppm Sea Water	Scaling	1. Bleed-off 2. Surface active agents such as polyphosphates. 3. Addition of acid. 4. pH adjustment. *Other considerations:* ▪ Adequate fouling factor ▪ Surface temperature ▪ Water temperature ▪ Clean system	No treatment required
Ironoxide	Low levels only	Moderate levels	Corrosion	1. Corrosion inhibitors in high concentrations (200 to 500 ppm). 2. Corrosion inhibitors in low concentrations (20 to 80 ppm). 3. pH control. 4. Proper materials of construction.	Corrosion inhibitors in high concentrations. Proper materials of construction.
pH	7 - 9	5 – 10			
Hydrogen Sulfide	Less than 10 ppm	10 – 50 ppm			
CO2	Less than 50 ppm	50 – 75 ppm			
Chloride	Less than 300 ppm	300 – 600 ppm			
Total Dissolved Solids	Less than 1000 ppm	1000 – 1500 ppm			
Slime & Algae	Slime and algae can form under certain environmental conditions		Reduced heat transfer due to forming of insulating coating, or pitting due to corrosion	Chlorinated phenols. Other biocides. Chlorine by hypochlorites or by liquid chlorine	No treatment required

Notes: *1. The tremendous variety in water quality around the country makes the recommendation of a single best method of treatment impossible. Consult a local water treatment specialist for specific treatment recommendations.*

2. Cupro-nickel is recommended if iron bacteria is high, suspended solids or dissolved oxygen levels are high.

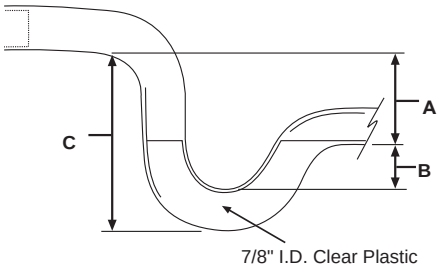
3. If the concentration of these corrosives exceeds the maximum tabulated in the cupro-nickel column, then the potential for serious corrosion problems exists.

Applications

Condensate Drain

Vertical units are factory provided with a condensate drain trap located inside the cabinet. Condensate removal piping must be pitched away from the unit not less than 1/4" per foot. A vent is required after the trap so that the condensate will drain away from the unit. The vent can also act as a clean out if the trap becomes clogged. To avoid having waste gases entering the building, the condensate drain should not be directly piped to a drain/waste/vent stack. See local codes for the correct application of condensate piping to drains.

Figure 20: Condensate trap detail



Improper trapping can lead to several problems. If the trap is too tall, negative pressure will prevent drainage, causing condensate backup. If the trap is too short the seal will be destroyed or nonexistent, producing the same effect as a non-trapped system.

Construct the trap of 7/8" clear plastic piping. The condensate piping from the drain trap must be sloped to facilitate proper drainage. The clear plastic trap should be clamped and removable for cleaning. It may be necessary to manually fill the trap at system startup, or to run the unit for sufficient time to build a condensate seal. The condensate trap and condensate piping drainage should be free of any foreign debris. Debris can prevent proper drainage and unit operation and result in condensate buildup.

Table 13: Condensate drain static pressures

Static Pressure	A	B	C
Standard	1-1/4"	5/8"	2-3/4"
High	1-1/2"	3/4"	3-1/8"

Operating Limits

Table 14: Air limits in °F (°C)

Air Limits	Standard Range Units		Geothermal Range Units	
	Cooling	Heating	Cooling	Heating
Minimum Ambient Air[1]	50°F (10°C)	50°F (10°C)	40°F (4°C)	40°F (4°C)
Rated Ambient	80°F (27°C)	70°F (21°C)	80°F (27°C)	70°F (21°C)
Maximum Ambient Air[2]	100°F (38°C)	85°F (29°C)	100°F (38°C)	85°F (29°C)
Minimum Entering Air[1]	50°F (10°C)	50°F (10°C)	50°F (10°C)	40°F (4°C)
Rated Entering Air	80/67°F (27°/19°C)	70°F (21°C)	80/67°F (27°/19°C)	70°F (21°C)
Maximum Entering Air[2]	100/83°F (38/28°C)	80°F (27°C)	100/83°F (38/28°C)	80°F (27°C)

Table 15: Water limits

Water Limits	Standard Range Units		Geothermal Range Units	
	Cooling	Heating	Cooling	Heating
Minimum Entering Water	55°F (13°C)	55°F (13°C)	30°F (-1°C)	20°F (-6°C)
Normal Entering Water	85°F (29°C)	70°F (21°C)	77°F (25°C)	40°F (4°C)
Maximum Entering Water	110°F (43°C)	90°F (32°C)	110°F (43°C)	90°F (32°C)
Minimum GPM/Ton	1.5			
Nominal GPM/Ton	3.0			
Maximum GPM/Ton	4.0			

Notes: *1. Maximum and minimum values may not be combined. If one value is at maximum or minimum, the other two conditions may not exceed the normal condition for standard units. Extended range units may combine any two maximum conditions, but not more than two, with all other conditions being normal conditions.*

2. This is not a normal or continuous operating condition. It is assumed that such a start-up is for the purpose of bringing the building space up to occupancy temperature.

Unit Selection

Achieving optimal performance with water source heat pump systems requires both accurate system design and proper equipment selection. Use a building load program to determine the heating and cooling loads of each zone prior to making equipment selections. With this information, the Daikin McQuay SelectTools™ software selection program for Water Source Heat Pumps can be used to provide fast, accurate and complete selections of all water source heat pump products. SelectTools software is available by contacting your local Daikin McQuay Representative.

While it is recommend that you use SelectTools software for all unit selections, manual selections can be accomplished using the same zone load information and the capacity tables available in this catalog.

Boiler/Tower (Water Loop) Application:

The following example illustrates a typical selection for a unit in a boiler/tower system for a commercial building.

The load in this zone requires 41,099 BTUH of total cooling, 30,327 BTUH of sensible cooling and 37,758 BTUH of total heating. The entering water temperatures for the design conditions are 90°F for cooling and 70°F for heating. The return air temperature is 80°F dry bulb with 67°F wet bulb and 70°F for heating.

Zone Requirement:

Total Cooling Load	=	41,099 BTUH
Sensible Cooling Load	=	30,327 BTUH
Heating Load	=	37,758 BTUH
Design Air Flow	=	1,200 CFM
Return Air - Cooling	=	80ºF DB/67ºF WB
Return Air - Heating	=	70ºF DB
Water Flow (Based on Cooling)	=	10.5 GPM

Since a Model GT *038 at full-load performance produces approximately 38,500 total cooling and 27,900 BTUH sensible cooling capacity, it is not sufficient for this zone and a model GT *044 should be considered.

Selection:

Model ..... GT *044

After making the preliminary selection (GT*044 – Full Load), enter the performance from the tables on page 42 & page 43) at the design conditions and read Total Cooling, Sensible Cooling, and Heating Capacity at 10.5 GPM:

Total Cooling Capacity	=	44,000 BTUH
Sensible Cooling Capacity	=	31,900 BTUH
Heating Capacity	=	51,500 BTUH

Note: *The above performances are based on 1,400 CFM; therefore, the capacities need to be adjusted to reflect the unit performance at the zone required CFM.*

Determine the air flow correction factors from the table, "Air Flow Correction Factors – Full Load" on page 51.

For this example use Air Flow Setting #2 (1225 CFM):

Corrected Total Cooling = 44,000 × 0.988 = 43,472 BTUH

Corrected Sensible Cooling = 31,900 × 0.954 = 30,433 BTUH

Corrected Total Heating = 51,500 × 0.991 = 51,037 BTUH

Compare the corrected Total Cooling, Corrected Sensible Cooling, and the Corrected Total Heating figures to the Zone requirements. This selection meets the requirements.

Next, determine the power correction factors using the table, "Air Flow Correction Factors – Full Load" on page 51 using Air Flow Setting #2 (1225 CFM):

Corrected Cooling Input Power = 2.908 × 0.985 = 2.864 kW

Corrected Heating Input Power = 3.040 × 0.998 = 3.034 kW

The resulting efficiencies can be determined using the corrected capacities and input power:

EER = Cooling Capacity (BTUH) ÷ Input Power (Watts)

EER = 43,472 BTUH ÷ (2.864 kW × 1000) = 15.2

COP = Heating Capacity (Watts) ÷ Input Power (Watts)

COP = (51,037 BTUH ÷ 3.412) ÷ (3.034 kW × 1000) = 4.93

Geothermal (Ground Loop) Application:

The following example illustrates the same zone in a geothermal application.

The space requirements for the zone are the same as the previous example – 41,099 BTUH of total cooling and 30,327 BTUH of sensible cooling and 37,758 BTUH of heating. Geothermal loop software programs are available to help determine the size of the loop field based on:

- Desired entering water temperatures for the system.
- Specific loop field design criteria based on acreage available, loop field spacing, vertical bore depth, piping selected, flow rates, circulated heat transfer fluid, and local formation geology for the loop which produces specific min./max loop temperatures for the unit selection.

Entering fluid temperatures for geothermal systems can be as high as 110ºF and as low as 20ºF. Design entering fluid temperatures for heating and cooling are selected by the design engineer based on building loads, ground temperatures, and soil conditions. Typical design entering fluid temperatures are 90°F for cooling (summer) and 45°F for heating (winter). As a rule of thumb, the design entering fluid temperature for cooling is 10°F below the maximum outdoor air temperature, and the design entering fluid temperature for heating is 40°F above the minimum outdoor air temperature. Water flow rates are typically 2.5 to 3.0 GPM per ton and the use of antifreeze is recommended in most northern applications.

Zone Requirement:

Total Cooling Zone	=	41,099 BTUH
Sensible Cooling Zone	=	30,327 BTUH
Heating Zone	=	37,758 BTUH
Design Air Flow	=	1,200 CFM
Return air – Cooling	=	80°F DB/67°F WB
Return air – Heating	=	70°F
Entering Fluid Temperature - Cooling	=	100°F – 20% P.G.
Entering Fluid Temperature - Heating	=	45°F – 20% P.G.

A Model GT *044 is chosen for this geothermal application. Model "GT" offers insulated water piping for condensation considerations and a different freezestat setting to allow entering fluid temperatures down to 20ºF (with antifreeze). Output capacities should be recalculated using the antifreeze correction tables that are shown on page 56. The Model GT *044 is first considered but may not meet the Zone requirements due to the reduced entering fluid temperatures (45ºF) and an antifreeze solution of 20% propylene Glycol.

Selection:

Model ..... GT *044

From the capacity tables on page 42 & page 43.

Total cooling capacity	=	41,900 BTUH
Table Sensible cooling	=	31,100 BTUH
Total heating capacity	=	39,200 BTUH

Next, determine the airflow and antifreeze correction factors.

Corrected Capacity = Capacity Table Data × Air Flow Correction × Antifreeze Correction

Corrected Total Cooling	=	41,900 × 0.988 × 0.980
	=	40,569 BTUH
Corrected Sensible Cooling	=	31,100 × 0.954 × 0.980
	=	29,076 BTUH
Corrected Heating Capacity	=	39,200 × 0.991 × 0.975
	=	37,876 BTUH

Since the sensible capacity is slightly less than the design sensible load, judgment must be used to determine if the next larger capacity unit is necessary. Oversized equipment should be avoided to minimize the potential for humidity and comfort issues.

Next, determine the power correction factors from the table, "Air Flow Correction Factors – Full Load" on page 51 using Air Flow Setting #2 (1225 CFM):

Corrected Cooling Input Power = 3.246 × 0.985 = 3.197 kW

Corrected Heating Input Power = 2.725 × 0.998 = 2.720 kW

The resulting efficiencies can be determined using the corrected capacities and corrected input power:

EER = Cooling Capacity (BTUH) ÷ Input Power (Watts)

EER = 40,569 BTUH ÷ (3.197 kW × 1000) = 12.7

COP = Heating Capacity (Watts) ÷ Input Power (Watts)

COP = (37,876 BTUH ÷ 3.412) ÷ (2.720 kW × 1000) = 4.08

** - indicates Vertical or Horizontal configuration.*

Loop Pump Application and Selection

The SmartSource loop pump package is intended for systems designed specifically for distributed or decentralized pump applications eliminating the need for central pumping systems. These systems can be applied to geothermal or boiler/tower applications. However, geothermal applications tend to be more common since system head losses can be better managed to suite the system design requirements. To do so, attention must be given to minimize head loss in the piping system. These recommendations include:

- Minimize head loss in headers and unit flex hose connections to less than 4 ft. per 100 ft of pipe
- Vertical bore length should be limited to:
  - 200 ft for 3/4" HDPE U-tube pipe
  - 300 ft for 1" HDPE U-tube pipe
  - 500 ft for 1¼" HDPE U-tube pipe

Notes: *1. Unit head loss should not exceed 12 ft of water.*

2. Use ball or butterfly valves to minimize head loss.

3. Do not use flow control devices such as Circuit Sentry™ flow regulating valves Control valves, if necessary, Cv should be greater than or equal to the unit flow rate.

The benefit of a decentralized system can be realized by minimizing head loss while allowing the SmartSource loop pump(s) to cycle on when there is a call for heating or cooling. This allows the loop pump(s) to remain off during the unit off-cycle. In a typical 40-hour per week operating schedule, a significant portion of the energy consumed by a central pumping systems occurs during unoccupied periods due to reduced pump efficiencies at part load. However, lower annual energy consumption can be realized with the decentralized SmartSource loop pump(s) when head loss and operating hours are minimized.

The maximum working pressure is 145 psi or 335 ft. of water. As a result, this pump system must be limited to mid-rise building applications of no more than approximately 30 stories high. Excessive working pressure can damage the pump seals and reduce the pump operating life. An intermediate heat exchanger should be considered for high-rise building applications to limit static pressures to no more than 145 psi or 335 ft. of water.

When selecting an appropriate SmartSource loop pump, the working fluid (water plus antifreeze), total head loss and flow must be known. The following represents the typical total head loss calculation for a decentralized geothermal loop pump application:

- Using nominal 2-ton vertical unit W.GTV.1.026
- Fluid – 15% Methanol Solution in Water
- Design EWT Heating - 35°F

(Maximum pressure drop occurs with high density fluid. As a result, the design heating EWT will be used to calculate the Total Head Loss)

- Design Water Flow – 3 gpm/ton or 6 gpm for a 2-ton unit
- Length of 1" HDPE piping between the unit and the loop field manifold – 40 feet of length
- Geothermal Loop – (1) 1" HDPE U-tube - 300 feet bore depth

Component	Head Loss (Ft. of W.C.)
1" HDPE Piping and Elbows	2.3
Geothermal Loop Piping	8.6
Unit – W.GTV.1.026	5.5
Total	16.4

For the design conditions of 6 gpm and a total head loss of 16.4 Ft., select the UP 26-99F, single pump option. The system curve and pump curve for this selection is shown in Figure 23. As a result, the actual calculated flow will be 7.56 gpm with a head on the pump of 28 Ft. Applications with higher head loss may require the UP 26-116F or one of the two-pump options using either a UP 26-99F or UP 26-116F piped in series. Pumps piped in series provide approximately double the head capability compared to single pump systems. Also see "Loop Pump Performance" pump curves on page 52.

Figure 21: Dual Grundfos UP26 Pumps - Heat Pumps (side view)

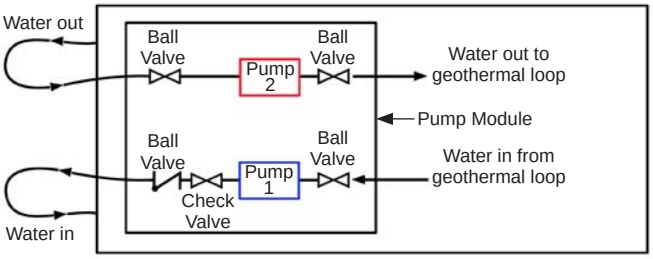


Figure 22: Single Grundfos UP26 - Heat Pump (side view)

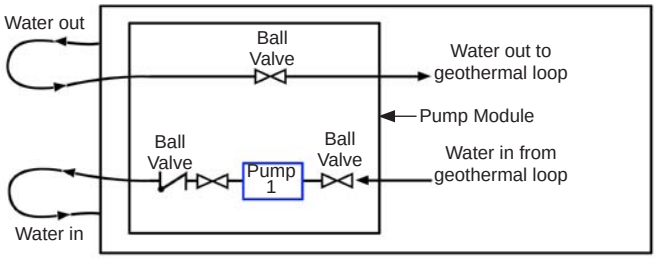
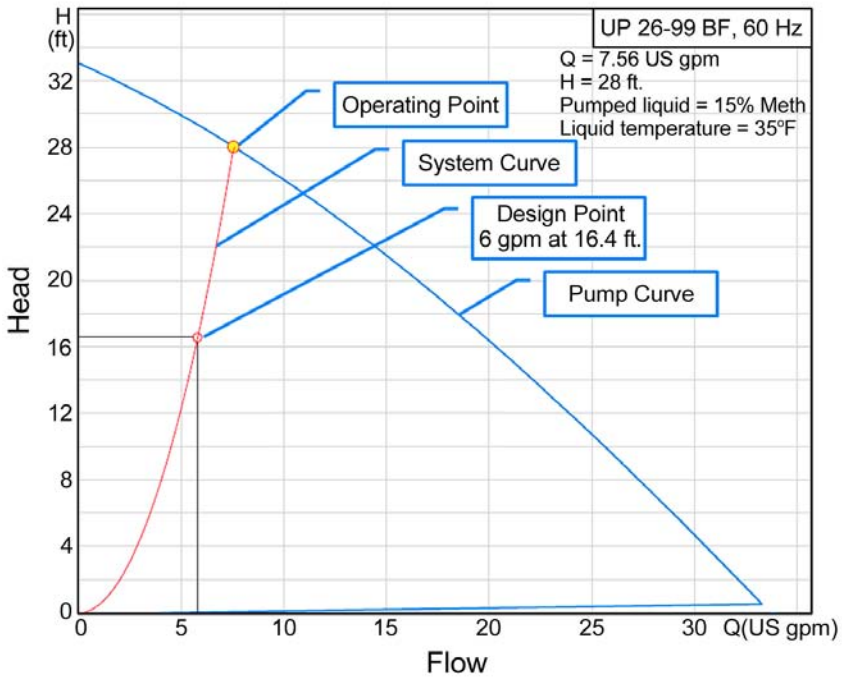


Figure 23: System & pump curve for UP 26-99F single pump option



Capacity Data – Size 026 (800 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	4.0	1.2	2.7	65/55	Tint = Operation Not Recommended (See "Appendix-A" on page 72 for table legend)					14900	1.294	10500	83	3.37
		1.2	2.7	70/59						14700	1.350	10100	87	3.19
		1.2	2.7	75/63						14500	1.420	9700	92	2.99
		1.2	2.7	80/67						14200	1.490	9100	96	2.79
		1.2	2.7	85/71										
	6.0	2.5	5.7	65/55						15400	1.305	10900	84	3.46
		2.5	5.7	70/59						15300	1.361	10700	88	3.29
		2.5	5.7	75/63						15000	1.431	10100	92	3.07
		2.5	5.7	80/67						14800	1.501	9700	97	2.89
		2.5	5.7	85/71										
	8.0	4.2	9.6	65/55						16000	1.317	11500	84	3.56
		4.2	9.6	70/59						15800	1.373	11100	88	3.37
		4.2	9.6	75/63						15600	1.443	10700	93	3.17
		4.2	9.6	80/67						15400	1.513	10200	98	2.98
		4.2	9.6	85/71										
30	4.0	1.2	2.7	65/55						17500	1.336	12900	86	3.84
		1.2	2.7	70/59	25400	19900	0.902	28500	28.2	17300	1.392	12500	90	3.64
		1.2	2.7	75/63	27000	19600	0.918	30100	29.4	17100	1.462	12100	95	3.42
		1.2	2.7	80/67	28600	19200	0.934	31800	30.6	16900	1.532	11700	99	3.23
		1.2	2.7	85/71	30200	18800	0.950	33400	31.8					
	6.0	2.4	5.5	65/55	23800	21100	0.879	26800	27.1	18100	1.347	13500	87	3.93
		2.4	5.5	70/59	25400	20000	0.894	28500	28.4	17900	1.403	13100	91	3.74
		2.4	5.5	75/63	27100	19600	0.910	30200	29.8	17700	1.473	12700	95	3.52
		2.4	5.5	80/67	28700	19200	0.926	31900	31.0	17400	1.543	12100	100	3.30
		2.4	5.5	85/71	30300	18900	0.942	33500	32.2					
	8.0	4.1	9.3	65/55	23900	21200	0.871	26900	27.4	18600	1.358	14000	87	4.01
		4.1	9.3	70/59	25500	20000	0.886	28500	28.8	18500	1.414	13700	91	3.83
		4.1	9.3	75/63	27100	19600	0.902	30200	30.0	18200	1.484	13100	96	3.59
		4.1	9.3	80/67	28700	19300	0.918	31800	31.3	18000	1.554	12700	101	3.39
		4.1	9.3	85/71	30400	18900	0.934	33600	32.5					
40	4.0	1.1	2.6	65/55	24400	21600	0.986	27800	24.7	20400	1.394	15600	89	4.29
		1.1	2.6	70/59	26000	20400	1.001	29400	26.0	20200	1.450	15300	93	4.08
		1.1	2.6	75/63	27600	20100	1.017	31100	27.1	20000	1.520	14800	98	3.85
		1.1	2.6	80/67	29200	19700	1.033	32700	28.3	19800	1.590	14400	103	3.65
		1.1	2.6	85/71	30800	19300	1.049	34400	29.4					
	6.0	2.3	5.4	65/55	24400	21600	0.978	27700	24.9	21000	1.405	16200	90	4.38
		2.3	5.4	70/59	26000	20500	0.993	29400	26.2	20800	1.461	15800	94	4.17
		2.3	5.4	75/63	27700	20100	1.009	31100	27.5	20600	1.531	15400	99	3.94
		2.3	5.4	80/67	29300	19700	1.025	32800	28.6	20300	1.601	14800	103	3.71
		2.3	5.4	85/71	30900	19400	1.041	34500	29.7					
	8.0	4.0	9.0	65/55	24500	21700	0.970	27800	25.3	21500	1.416	16700	91	4.45
		4.0	9.0	70/59	26100	20500	0.985	29500	26.5	21300	1.472	16300	95	4.24
		4.0	9.0	75/63	27700	20100	1.001	31100	27.7	21100	1.542	15800	99	4.01
		4.0	9.0	80/67	29300	19800	1.017	32800	28.8	20900	1.612	15400	104	3.80
		4.0	9.0	85/71	31000	19400	1.033	34500	30.0					
50	4.0	1.1	2.5	65/55	24600	22000	1.092	28300	22.5	23500	1.464	18500	93	4.70
		1.1	2.5	70/59	26200	20800	1.107	30000	23.7	23300	1.520	18100	97	4.49
		1.1	2.5	75/63	27800	20500	1.123	31600	24.8	23100	1.590	17700	102	4.25
		1.1	2.5	80/67	29400	20100	1.139	33300	25.8	22800	1.660	17100	106	4.02
		1.1	2.5	85/71	31000	19700	1.155	34900	26.8					
	6.0	2.3	5.2	65/55	24700	22000	1.084	28400	22.8	24000	1.475	19000	94	4.76
		2.3	5.2	70/59	26300	20900	1.099	30100	23.9	23800	1.531	18600	97	4.55
		2.3	5.2	75/63	27900	20500	1.115	31700	25.0	23600	1.601	18100	102	4.32
		2.3	5.2	80/67	29500	20100	1.131	33400	26.1	23400	1.671	17700	107	4.10
		2.3	5.2	85/71	31100	19800	1.147	35000	27.1					
	8.0	3.9	8.8	65/55	24700	22100	1.076	28400	23.0	24600	1.486	19500	94	4.85
		3.9	8.8	70/59	26300	20900	1.092	30000	24.1	24400	1.542	19100	98	4.63
		3.9	8.8	75/63	27900	20500	1.108	31700	25.2	24200	1.612	18700	103	4.40
		3.9	8.8	80/67	29600	20100	1.124	33400	26.3	23900	1.682	18200	108	4.16
		3.9	8.8	85/71	31200	19800	1.140	35100	27.4					
60	4.0	1.1	2.4	65/55	24300	22000	1.207	28400	20.1	26600	1.541	21300	97	5.05
		1.1	2.4	70/59	25900	20900	1.222	30100	21.2	26400	1.597	20900	100	4.84
		1.1	2.4	75/63	27500	20500	1.238	31700	22.2	26200	1.667	20500	105	4.60
		1.1	2.4	80/67	29100	20100	1.254	33400	23.2	25900	1.737	20000	110	4.37
		1.1	2.4	85/71	30800	19800	1.270	35100	24.3					
	6.0	2.2	5.1	65/55	24400	22100	1.199	28500	20.4	27100	1.552	21800	97	5.11
		2.2	5.1	70/59	26000	20900	1.214	30100	21.4	26900	1.608	21400	101	4.90
		2.2	5.1	75/63	27600	20500	1.230	31800	22.4	26700	1.678	21000	106	4.66
		2.2	5.1	80/67	29200	20200	1.246	33500	23.4	26500	1.748	20500	111	4.44
		2.2	5.1	85/71	30800	19800	1.262	35100	24.4					
	8.0	3.8	8.6	65/55	24400	22100	1.192	28500	20.5	27700	1.563	22400	98	5.19
		3.8	8.6	70/59	26000	20900	1.207	30100	21.5	27500	1.619	22000	102	4.97
		3.8	8.6	75/63	27700	20500	1.223	31900	22.6	27300	1.689	21500	106	4.73
		3.8	8.6	80/67	29300	20200	1.239	33500	23.6	27000	1.759	21000	111	4.49
		3.8	8.6	85/71	30900	19800	1.255	35200	24.6					

Capacity Data – Size 026 (800 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	4.0	1.0	2.4	65/55	23500	21700	1.333	28000	17.6	29600	1.621	24100	100	
		1.0	2.4	70/59	25100	20500	1.348	29700	18.6	29400	1.677	23700	104	5.13
		1.0	2.4	75/63	26800	20200	1.364	31500	19.6	29200	1.747	23200	109	4.89
		1.0	2.4	80/67	28400	19800	1.380	33100	20.6	29000	1.817	22800	113	4.67
		1.0	2.4	85/71	30000	19400	1.396	34800	21.5					
	6.0	2.2	5.0	65/55	23600	21700	1.325	28100	17.8	30200	1.632	24600	101	5.42
		2.2	5.0	70/59	25200	20600	1.340	29800	18.8	30000	1.688	24200	105	5.20
		2.2	5.0	75/63	26800	20200	1.356	31400	19.8	29800	1.758	23800	109	4.96
		2.2	5.0	80/67	28400	19800	1.372	33100	20.7	29500	1.828	23300	114	4.73
		2.2	5.0	85/71	30100	19500	1.388	34800	21.7					
	8.0	3.7	8.4	65/55	23700	21800	1.317	28200	18.0	30700	1.643	25100	101	5.47
		3.7	8.4	70/59	25300	20600	1.333	29800	19.0	30500	1.699	24700	105	5.26
		3.7	8.4	75/63	26900	20200	1.349	31500	19.9	30300	1.769	24300	110	5.02
		3.7	8.4	80/67	28500	19800	1.365	33200	20.9	30100	1.839	23800	115	4.79
		3.7	8.4	85/71	30100	19500	1.381	34800	21.8					
80	4.0	1.0	2.3	65/55	22400	21100	1.471	27400	15.2	32500	1.699	26700	103	5.60
		1.0	2.3	70/59	24000	20000	1.486	29100	16.2	32300	1.755	26300	107	5.39
		1.0	2.3	75/63	25600	19600	1.502	30700	17.0	32100	1.825	25900	112	5.15
		1.0	2.3	80/67	27200	19200	1.518	32400	17.9	31900	1.895	25400	117	4.93
		1.0	2.3	85/71	28800	18900	1.534	34000	18.8					
	6.0	2.1	4.9	65/55	22500	21200	1.464	27500	15.4	33100	1.710	27300	104	5.67
		2.1	4.9	70/59	24100	20000	1.479	29100	16.3	32900	1.766	26900	108	5.45
		2.1	4.9	75/63	25700	19600	1.495	30800	17.2	32600	1.836	26300	113	5.20
		2.1	4.9	80/67	27300	19300	1.511	32500	18.1	32400	1.906	25900	117	4.98
		2.1	4.9	85/71	28900	18900	1.527	34100	18.9					
	8.0	3.6	8.2	65/55	22500	21200	1.456	27500	15.5	33600	1.722	27700	105	5.71
		3.6	8.2	70/59	24100	20000	1.471	29100	16.4	33400	1.778	27300	108	5.50
		3.6	8.2	75/63	25700	19600	1.487	30800	17.3	33200	1.848	26900	113	5.26
		3.6	8.2	80/67	27400	19300	1.503	32500	18.2	33000	1.918	26500	118	5.04
		3.6	8.2	85/71	29000	18900	1.519	34200	19.1					
90	4.0	1.0	2.3	65/55	21000	20500	1.624	26500	12.9	35100	1.772	29100	106	5.80
		1.0	2.3	70/59	22600	19300	1.639	28200	13.8	34900	1.828	28700	110	5.59
		1.0	2.3	75/63	24200	18900	1.655	29800	14.6	34700	1.898	28200	115	5.35
		1.0	2.3	80/67	25800	18600	1.671	31500	15.4	34500	1.968	27800	120	5.13
		1.0	2.3	85/71	27400	18200	1.687	33200	16.2					
	6.0	2.1	4.8	65/55	21100	20500	1.616	26600	13.1	35700	1.783	29600	107	5.86
		2.1	4.8	70/59	22700	19300	1.631	28300	13.9	35500	1.839	29200	111	5.65
		2.1	4.8	75/63	24300	19000	1.647	29900	14.8	35300	1.909	28800	116	5.41
		2.1	4.8	80/67	25900	18600	1.663	31600	15.6	35100	1.979	28300	120	5.19
		2.1	4.8	85/71	27500	18200	1.680	33200	16.4					
	8.0	3.6	8.1	65/55	21100	20500	1.609	26600	13.1	36200	1.794	30100	108	5.91
		3.6	8.1	70/59	22700	19400	1.624	28200	14.0	36100	1.850	29800	112	5.71
		3.6	8.1	75/63	24300	19000	1.640	29900	14.8	35800	1.920	29200	116	5.46
		3.6	8.1	80/67	26000	18600	1.656	31700	15.7	35600	1.990	28800	121	5.24
		3.6	8.1	85/71	27600	18300	1.672	33300	16.5					
100	4.0	1.0	2.3	65/55	19400	19900	1.793	25500	10.8					
		1.0	2.3	70/59	21000	18700	1.808	27200	11.6					
		1.0	2.3	75/63	22600	18300	1.824	28800	12.4					
		1.0	2.3	80/67	24200	17900	1.840	30500	13.2					
		1.0	2.3	85/71	25800	17600	1.856	32100	13.9					
	6.0	2.1	4.7	65/55	19500	19900	1.785	25600	10.9					
		2.1	4.7	70/59	21100	18700	1.800	27200	11.7					
		2.1	4.7	75/63	22700	18300	1.816	28900	12.5					
		2.1	4.7	80/67	24300	18000	1.832	30600	13.3					
		2.1	4.7	85/71	25900	17600	1.848	32200	14.0					
	8.0	3.5	8.0	65/55	19500	19900	1.777	25600	11.0					
		3.5	8.0	70/59	21100	18700	1.793	27200	11.8					
		3.5	8.0	75/63	22700	18400	1.809	28900	12.5					
		3.5	8.0	80/67	24400	18000	1.825	30600	13.4					
		3.5	8.0	85/71	26000	17600	1.841	32300	14.1					
110	4.0	1.0	2.3	65/55	17600	19100	1.980	24400	8.9					
		1.0	2.3	70/59	19200	17900	1.995	26000	9.6					
		1.0	2.3	75/63	20800	17600	2.011	27700	10.3					
		1.0	2.3	80/67	22400	17200	2.027	29300	11.1					
		1.0	2.3	85/71	24000	16800	2.043	31000	11.7					
	6.0	2.1	4.7	65/55	17600	19100	1.972	24300	8.9					
		2.1	4.7	70/59	19300	17900	1.987	26100	9.7					
		2.1	4.7	75/63	20900	17600	2.003	27700	10.4					
		2.1	4.7	80/67	22500	17200	2.019	29400	11.1					
		2.1	4.7	85/71	24100	16900	2.035	31000	11.8					
	8.0	3.5	7.9	65/55	17700	19200	1.964	24400	9.0					
		3.5	7.9	70/59	19300	18000	1.979	26100	9.8					
		3.5	7.9	75/63	20900	17600	1.995	27700	10.5					
		3.5	7.9	80/67	22500	17200	2.011	29400	11.2					
		3.5	7.9	85/71	24200	16900	2.027	31100	11.9					

Tint = Operation Not Recommended

Notes:

1. *Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.*
2. *Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.*
3. *See performance correction tables for operating conditions other than those listed.*
4. *Interpolation is permissible; extrapolation is not.*
5. *For performance data outside the EAT listed, refer to the McQuay SelectTools selection program*
6. *Table does not reflect fan or pump power corrections for AHRI/ISO conditions.*
7. *Data is base on unit at full load operation.*

Capacity Data – Size 032 (1000 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	5.0	1.8	4.1	65/55	Tint = Operation Not Recommended (See "Appendix-A" on page 72 for table legend)					19500	1.694	13700	84	3.37
		1.8	4.1	70/59						19300	1.768	13300	88	3.20
		1.8	4.1	75/63						19100	1.861	12700	93	3.01
		1.8	4.1	80/67						18900	1.954	12200	97	2.83
		1.8	4.1	85/71										
	7.5	3.7	8.5	65/55						20300	1.711	14500	85	3.47
		3.7	8.5	70/59						20200	1.786	14100	89	3.31
		3.7	8.5	75/63						20000	1.879	13600	93	3.12
		3.7	8.5	80/67						19800	1.972	13100	98	2.94
		3.7	8.5	85/71										
	10.0	6.3	14.4	65/55						21200	1.729	15300	86	3.59
		6.3	14.4	70/59						21100	1.803	14900	89	3.43
		6.3	14.4	75/63						20900	1.896	14400	94	3.23
		6.3	14.4	80/67						20600	1.989	13800	99	3.03
		6.3	14.4	85/71										
30	5.0	1.7	4.0	65/55						22800	1.774	16700	87	3.76
		1.7	4.0	70/59	30600	21900	1.245	34800	24.6	22600	1.849	16300	91	3.58
		1.7	4.0	75/63	32500	22500	1.266	36800	25.7	22400	1.942	15800	96	3.38
		1.7	4.0	80/67	34500	23200	1.286	38900	26.8	22200	2.035	15300	100	3.19
		1.7	4.0	85/71	36500	23800	1.307	41000	27.9					
	7.5	3.6	8.3	65/55	28700	22300	1.214	32800	23.6	23600	1.792	17500	88	3.86
		3.6	8.3	70/59	30700	21900	1.233	34900	24.9	23500	1.866	17100	92	3.69
		3.6	8.3	75/63	32700	22600	1.253	37000	26.1	23300	1.959	16600	96	3.48
		3.6	8.3	80/67	34600	23200	1.274	38900	27.2	23100	2.053	16100	101	3.29
		3.6	8.3	85/71	36600	23800	1.294	41000	28.3					
	10.0	6.1	13.9	65/55	28800	22300	1.201	32900	24.0	24500	1.810	18300	89	3.96
		6.1	13.9	70/59	30800	22000	1.221	35000	25.2	24400	1.884	18000	92	3.79
		6.1	13.9	75/63	32800	22600	1.241	37000	26.4	24200	1.977	17500	97	3.58
		6.1	13.9	80/67	34700	23200	1.262	39000	27.5	24000	2.070	16900	102	3.39
		6.1	13.9	85/71	36700	23900	1.282	41100	28.6					
40	5.0	1.7	3.9	65/55	29800	23100	1.347	34400	22.1	26300	1.853	20000	90	4.16
		1.7	3.9	70/59	31800	22700	1.366	36500	23.3	26100	1.927	19500	94	3.97
		1.7	3.9	75/63	33700	23300	1.386	38400	24.3	25900	2.020	19000	99	3.75
		1.7	3.9	80/67	35700	24000	1.407	40500	25.4	25700	2.113	18500	104	3.56
		1.7	3.9	85/71	37700	24600	1.427	42600	26.4					
	7.5	3.5	8.0	65/55	29900	23100	1.334	34500	22.4	27100	1.870	20700	91	4.24
		3.5	8.0	70/59	31900	22700	1.354	36500	23.6	27000	1.945	20400	95	4.06
		3.5	8.0	75/63	33900	23400	1.374	38600	24.7	26800	2.038	19800	100	3.85
		3.5	8.0	80/67	35800	24000	1.394	40600	25.7	26600	2.131	19300	104	3.65
		3.5	8.0	85/71	37800	24600	1.415	42600	26.7					
	10.0	5.9	13.5	65/55	30000	23100	1.322	34500	22.7	28000	1.888	21600	92	4.34
		5.9	13.5	70/59	32000	22800	1.341	36600	23.9	27900	1.962	21200	96	4.16
		5.9	13.5	75/63	34000	23400	1.362	38600	25.0	27700	2.055	20700	101	3.95
		5.9	13.5	80/67	35900	24000	1.382	40600	26.0	27400	2.149	20100	105	3.73
		5.9	13.5	85/71	37900	24700	1.403	42700	27.0					
50	5.0	1.6	3.8	65/55	30100	23400	1.475	35100	20.4	29900	1.929	23300	94	4.54
		1.6	3.8	70/59	32000	23000	1.495	37100	21.4	29700	2.003	22900	97	4.34
		1.6	3.8	75/63	34000	23700	1.515	39200	22.4	29500	2.096	22300	102	4.12
		1.6	3.8	80/67	36000	24300	1.536	41200	23.4	29300	2.189	21800	107	3.92
		1.6	3.8	85/71	38000	24900	1.556	43300	24.4					
	7.5	3.4	7.8	65/55	30200	23400	1.463	35200	20.6	30800	1.946	24200	94	4.63
		3.4	7.8	70/59	32200	23100	1.482	37300	21.7	30600	2.021	23700	98	4.43
		3.4	7.8	75/63	34100	23700	1.503	39200	22.7	30400	2.114	23200	103	4.21
		3.4	7.8	80/67	36100	24300	1.523	41300	23.7	30200	2.207	22700	108	4.01
		3.4	7.8	85/71	38100	25000	1.544	43400	24.7					
	10.0	5.8	13.2	65/55	30300	23500	1.451	35300	20.9	31600	1.964	24900	95	4.71
		5.8	13.2	70/59	32300	23100	1.470	37300	22.0	31500	2.038	24500	99	4.53
		5.8	13.2	75/63	34200	23700	1.491	39300	22.9	31300	2.131	24000	104	4.30
		5.8	13.2	80/67	36200	24400	1.511	41400	24.0	31100	2.224	23500	109	4.09
		5.8	13.2	85/71	38200	25000	1.531	43400	25.0					
60	5.0	1.6	3.7	65/55	29600	23300	1.617	35100	18.3	33500	2.002	26700	97	4.90
		1.6	3.7	70/59	31600	23000	1.636	37200	19.3	33400	2.077	26300	101	4.71
		1.6	3.7	75/63	33500	23600	1.657	39200	20.2	33200	2.170	25800	106	4.48
		1.6	3.7	80/67	35500	24200	1.677	41200	21.2	33000	2.263	25300	110	4.27
		1.6	3.7	85/71	37500	24800	1.698	43300	22.1					
	7.5	3.3	7.6	65/55	29700	23300	1.604	35200	18.5	34400	2.020	27500	98	4.99
		3.3	7.6	70/59	31700	23000	1.624	37200	19.5	34200	2.094	27100	101	4.78
		3.3	7.6	75/63	33600	23600	1.644	39200	20.4	34000	2.187	26500	106	4.55
		3.3	7.6	80/67	35600	24300	1.665	41300	21.4	33800	2.280	26000	111	4.34
		3.3	7.6	85/71	37600	24900	1.685	43400	22.3					
	10.0	5.6	12.8	65/55	29800	23400	1.592	35200	18.7	35300	2.037	28300	99	5.07
		5.6	12.8	70/59	31800	23000	1.612	37300	19.7	35100	2.112	27900	102	4.87
		5.6	12.8	75/63	33800	23700	1.632	39400	20.7	34900	2.205	27400	107	4.63
		5.6	12.8	80/67	35700	24300	1.652	41300	21.6	34700	2.298	26900	112	4.42
		5.6	12.8	85/71	37700	24900	1.673	43400	22.5					

Capacity Data – Size 032 (1000 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	5.0	1.6	3.6	65/55	28600	22900	1.775	34700	16.1	37100	2.073	30000	100	5.24
		1.6	3.6	70/59	30600	22600	1.795	36700	17.0	36900	2.147	29600	104	5.03
		1.6	3.6	75/63	32500	23200	1.815	38700	17.9	36700	2.241	29100	109	4.80
		1.6	3.6	80/67	34500	23800	1.836	40800	18.8	36500	2.334	28500	114	4.58
		1.6	3.6	85/71	36500	24500	1.856	42800	19.7					
	7.5	3.3	7.5	65/55	28700	23000	1.763	34700	16.3	38000	2.091	30900	101	5.32
		3.3	7.5	70/59	30700	22600	1.782	36800	17.2	37800	2.165	30400	105	5.11
		3.3	7.5	75/63	32600	23200	1.803	38800	18.1	37600	2.258	29900	110	4.88
		3.3	7.5	80/67	34600	23900	1.823	40800	19.0	37400	2.351	29400	114	4.66
		3.3	7.5	85/71	36600	24500	1.844	42900	19.8					
	10.0	5.5	12.6	65/55	28800	23000	1.751	34800	16.4	38800	2.108	31600	102	5.39
		5.5	12.6	70/59	30800	22600	1.770	36800	17.4	38700	2.183	31200	106	5.19
		5.5	12.6	75/63	32700	23300	1.791	38800	18.3	38500	2.276	30700	110	4.95
		5.5	12.6	80/67	34700	23900	1.811	40900	19.2	38300	2.369	30200	115	4.73
		5.5	12.6	85/71	36700	24500	1.831	42900	20.0					
80	5.0	1.5	3.5	65/55	27200	22300	1.955	33900	13.9	40400	2.142	33100	103	5.52
		1.5	3.5	70/59	29200	22000	1.975	35900	14.8	40300	2.216	32700	107	5.33
		1.5	3.5	75/63	31100	22600	1.995	37900	15.6	40100	2.309	32200	112	5.09
		1.5	3.5	80/67	33100	23200	2.016	40000	16.4	39900	2.402	31700	117	4.86
		1.5	3.5	85/71	35100	23900	2.036	42000	17.2					
	7.5	3.2	7.3	65/55	27300	22400	1.943	33900	14.1	41300	2.159	33900	104	5.60
		3.2	7.3	70/59	29300	22000	1.962	36000	14.9	41200	2.234	33600	108	5.40
		3.2	7.3	75/63	31200	22700	1.983	38000	15.7	41000	2.327	33100	113	5.16
		3.2	7.3	80/67	33200	23300	2.003	40000	16.6	40700	2.420	32400	117	4.92
		3.2	7.3	85/71	35200	23900	2.024	42100	17.4					
	10.0	5.4	12.3	65/55	27400	22400	1.931	34000	14.2	42200	2.177	34800	105	5.68
		5.4	12.3	70/59	29400	22100	1.950	36100	15.1	42000	2.251	34300	109	5.46
		5.4	12.3	75/63	31300	22700	1.971	38000	15.9	41800	2.344	33800	113	5.22
		5.4	12.3	80/67	33300	23300	1.991	40100	16.7	41600	2.437	33300	118	5.00
		5.4	12.3	85/71	35300	24000	2.011	42200	17.6					
90	5.0	1.5	3.5	65/55	25600	21700	2.161	33000	11.8	43500	2.208	36000	106	5.77
		1.5	3.5	70/59	27600	21300	2.181	35000	12.7	43300	2.282	35500	110	5.56
		1.5	3.5	75/63	29500	22000	2.201	37000	13.4	43100	2.375	35000	115	5.31
		1.5	3.5	80/67	31500	22600	2.222	39100	14.2	42900	2.468	34500	120	5.09
		1.5	3.5	85/71	33500	23200	2.242	41200	14.9					
	7.5	3.2	7.2	65/55	25700	21700	2.149	33000	12.0	44300	2.225	36700	107	5.83
		3.2	7.2	70/59	27700	21400	2.169	35100	12.8	44200	2.300	36400	111	5.63
		3.2	7.2	75/63	29600	22000	2.189	37100	13.5	44000	2.393	35800	116	5.38
		3.2	7.2	80/67	31600	22600	2.209	39100	14.3	43800	2.486	35300	120	5.16
		3.2	7.2	85/71	33600	23300	2.230	41200	15.1					
	10.0	5.3	12.1	65/55	25800	21800	2.137	33100	12.1	45200	2.243	37500	108	5.90
		5.3	12.1	70/59	27800	21400	2.156	35200	12.9	45000	2.317	37100	111	5.69
		5.3	12.1	75/63	29700	22100	2.177	37100	13.6	44800	2.410	36600	116	5.44
		5.3	12.1	80/67	31700	22700	2.197	39200	14.4	44600	2.503	36100	121	5.22
		5.3	12.1	85/71	33700	23300	2.218	41300	15.2					
100	5.0	1.5	3.4	65/55	23900	21100	2.398	32100	10.0					
		1.5	3.4	70/59	25900	20800	2.417	34100	10.7					
		1.5	3.4	75/63	27900	21400	2.438	36200	11.4					
		1.5	3.4	80/67	29800	22000	2.458	38200	12.1					
		1.5	3.4	85/71	31800	22700	2.479	40300	12.8					
	7.5	3.1	7.1	65/55	24000	21200	2.386	32100	10.1					
		3.1	7.1	70/59	26000	20800	2.405	34200	10.8					
		3.1	7.1	75/63	28000	21400	2.425	36300	11.5					
		3.1	7.1	80/67	29900	22100	2.446	38200	12.2					
		3.1	7.1	85/71	31900	22700	2.466	40300	12.9					
	10.0	5.2	12.0	65/55	24100	21200	2.373	32200	10.2					
		5.2	12.0	70/59	26100	20900	2.393	34300	10.9					
		5.2	12.0	75/63	28100	21500	2.413	36300	11.6					
		5.2	12.0	80/67	30000	22100	2.434	38300	12.3					
		5.2	12.0	85/71	32000	22700	2.454	40400	13.0					
110	5.0	1.5	3.4	65/55	22300	20700	2.669	31400	8.4					
		1.5	3.4	70/59	24200	20400	2.689	33400	9.0					
		1.5	3.4	75/63	26200	21000	2.709	35400	9.7					
		1.5	3.4	80/67	28200	21600	2.730	37500	10.3					
		1.5	3.4	85/71	30100	22300	2.750	39500	10.9					
	7.5	3.1	7.0	65/55	22400	20800	2.657	31500	8.4					
		3.1	7.0	70/59	24300	20400	2.676	33400	9.1					
		3.1	7.0	75/63	26300	21000	2.697	35500	9.8					
		3.1	7.0	80/67	28300	21700	2.717	37600	10.4					
		3.1	7.0	85/71	30200	22300	2.738	39500	11.0					
	10.0	5.2	11.8	65/55	22500	20800	2.645	31500	8.5					
		5.2	11.8	70/59	24400	20400	2.664	33500	9.2					
		5.2	11.8	75/63	26400	21100	2.685	35600	9.8					
		5.2	11.8	80/67	28400	21700	2.705	37600	10.5					
		5.2	11.8	85/71	30300	22300	2.725	39600	11.1					

Tint = Operation Not Recommended

Notes:

1. *Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.*
2. *Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.*
3. *See performance correction tables for operating conditions other than those listed.*
4. *Interpolation is permissible; extrapolation is not.*
5. *For performance data outside the EAT listed, refer to the McQuay SelectTools selection program*
6. *Table does not reflect fan or pump power corrections for AHRI/ISO conditions.*
7. *Data is base on unit at full load operation..*

Capacity Data – Size 038 (1250 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	6.0	2.1	4.8	65/55	Tint = Operation Not Recommended (See "Appendix-A" on page 72 for table legend)					23500	1.958	16800	83	3.51
		2.1	4.8	70/59						23400	2.042	16400	87	3.36
		2.1	4.8	75/63						23200	2.146	15900	92	3.17
		2.1	4.8	80/67						23100	2.251	15400	97	3.00
		2.1	4.8	85/71										
	9.0	4.4	10.1	65/55						24800	1.983	18000	84	3.66
		4.4	10.1	70/59						24600	2.067	17500	88	3.48
		4.4	10.1	75/63						24500	2.171	17100	93	3.30
		4.4	10.1	80/67						24300	2.276	16500	98	3.13
		4.4	10.1	85/71										
	12.0	7.4	17.0	65/55						26000	2.008	19100	85	3.79
		7.4	17.0	70/59						25900	2.092	18800	89	3.63
		7.4	17.0	75/63						25700	2.196	18200	94	3.43
		7.4	17.0	80/67						25600	2.301	17700	99	3.26
		7.4	17.0	85/71										
30	6.0	2.0	4.7	65/55						26700	2.058	19700	86	3.80
		2.0	4.7	70/59	31500	23100	1.342	36100	23.5	26600	2.142	19300	90	3.64
		2.0	4.7	75/63	33900	23800	1.366	38600	24.8	26400	2.247	18700	94	3.44
		2.0	4.7	80/67	36200	24600	1.390	40900	26.0	26300	2.351	18300	99	3.28
		2.0	4.7	85/71	38500	25400	1.414	43300	27.2					
	9.0	4.3	9.8	65/55	29400	23600	1.302	33800	22.6	27900	2.083	20800	87	3.92
		4.3	9.8	70/59	31700	23100	1.325	36200	23.9	27800	2.167	20400	90	3.76
		4.3	9.8	75/63	34000	23900	1.349	38600	25.2	27700	2.272	19900	95	3.57
		4.3	9.8	80/67	36300	24700	1.372	41000	26.5	27500	2.376	19400	100	3.39
		4.3	9.8	85/71	38600	25400	1.396	43400	27.7					
	12.0	7.2	16.4	65/55	29500	23700	1.285	33900	23.0	29200	2.108	22000	88	4.06
		7.2	16.4	70/59	31800	23200	1.307	36300	24.3	29100	2.192	21600	91	3.89
		7.2	16.4	75/63	34100	24000	1.331	38600	25.6	28900	2.297	21100	96	3.68
		7.2	16.4	80/67	36500	24700	1.355	41100	26.9	28800	2.401	20600	101	3.51
		7.2	16.4	85/71	38800	25500	1.379	43500	28.1					
40	6.0	2.0	4.5	65/55	32200	25800	1.489	37300	21.6	31100	2.154	23700	89	4.23
		2.0	4.5	70/59	34500	25300	1.511	39700	22.8	31000	2.238	23400	93	4.06
		2.0	4.5	75/63	36800	26100	1.535	42000	24.0	30900	2.343	22900	98	3.86
		2.0	4.5	80/67	39100	26900	1.559	44400	25.1	30700	2.447	22300	103	3.67
		2.0	4.5	85/71	41400	27600	1.583	46800	26.2					
	9.0	4.2	9.5	65/55	32300	25900	1.471	37300	22.0	32400	2.179	25000	90	4.35
		4.2	9.5	70/59	34600	25400	1.494	39700	23.2	32300	2.263	24600	94	4.18
		4.2	9.5	75/63	36900	26200	1.518	42100	24.3	32100	2.368	24000	99	3.97
		4.2	9.5	80/67	39200	26900	1.542	44500	25.4	32000	2.473	23600	104	3.79
		4.2	9.5	85/71	41600	27700	1.566	46900	26.6					
	12.0	7.0	16.0	65/55	32500	26000	1.454	37500	22.4	33600	2.205	26100	91	4.46
		7.0	16.0	70/59	34800	25500	1.477	39800	23.6	33500	2.288	25700	95	4.29
		7.0	16.0	75/63	37100	26200	1.501	42200	24.7	33400	2.393	25200	100	4.09
		7.0	16.0	80/67	39400	27000	1.525	44600	25.8	33200	2.498	24700	104	3.89
		7.0	16.0	85/71	41700	27700	1.549	47000	26.9					
50	6.0	1.9	4.4	65/55	34100	27500	1.647	39700	20.7	36000	2.246	28300	93	4.69
		1.9	4.4	70/59	36400	27000	1.669	42100	21.8	35900	2.330	27900	96	4.51
		1.9	4.4	75/63	38700	27800	1.693	44500	22.9	35700	2.435	27400	101	4.29
		1.9	4.4	80/67	41000	28500	1.717	46900	23.9	35600	2.539	26900	106	4.11
		1.9	4.4	85/71	43300	29300	1.741	49200	24.9					
	9.0	4.0	9.2	65/55	34200	27600	1.629	39800	21.0	37300	2.271	29500	93	4.81
		4.0	9.2	70/59	36500	27100	1.652	42100	22.1	37200	2.355	29200	97	4.63
		4.0	9.2	75/63	38900	27800	1.676	44600	23.2	37000	2.460	28600	102	4.40
		4.0	9.2	80/67	41200	28600	1.700	47000	24.2	36800	2.564	28000	107	4.20
		4.0	9.2	85/71	43500	29300	1.724	49400	25.2					
	12.0	6.8	15.5	65/55	34400	27600	1.612	39900	21.3	38500	2.296	30700	94	4.91
		6.8	15.5	70/59	36700	27100	1.635	42300	22.4	38400	2.380	30300	98	4.72
		6.8	15.5	75/63	39000	27900	1.659	44700	23.5	38300	2.485	29800	103	4.51
		6.8	15.5	80/67	41300	28600	1.683	47000	24.5	38100	2.589	29300	108	4.31
		6.8	15.5	85/71	43600	29400	1.707	49400	25.5					
60	6.0	1.9	4.3	65/55	34900	28300	1.810	41100	19.3	40800	2.334	32800	96	5.12
		1.9	4.3	70/59	37200	27800	1.833	43500	20.3	40600	2.418	32300	100	4.92
		1.9	4.3	75/63	39500	28600	1.857	45800	21.3	40500	2.523	31900	105	4.70
		1.9	4.3	80/67	41800	29300	1.880	48200	22.2	40300	2.627	31300	110	4.49
		1.9	4.3	85/71	44200	30100	1.904	50700	23.2					
	9.0	3.9	9.0	65/55	35100	28400	1.793	41200	19.6	42000	2.359	33900	97	5.21
		3.9	9.0	70/59	37400	27900	1.815	43600	20.6	41900	2.443	33600	101	5.02
		3.9	9.0	75/63	39700	28600	1.839	46000	21.6	41700	2.548	33000	106	4.79
		3.9	9.0	80/67	42000	29400	1.863	48400	22.5	41600	2.652	32500	111	4.59
		3.9	9.0	85/71	44300	30100	1.887	50700	23.5					
	12.0	6.6	15.2	65/55	35200	28400	1.775	41300	19.8	43300	2.384	35200	98	5.32
		6.6	15.2	70/59	37500	27900	1.798	43600	20.9	43200	2.468	34800	102	5.13
		6.6	15.2	75/63	39800	28700	1.822	46000	21.8	43000	2.573	34200	107	4.89
		6.6	15.2	80/67	42100	29400	1.846	48400	22.8	42800	2.677	33700	112	4.68
		6.6	15.2	85/71	44500	30200	1.870	50900	23.8					

Capacity Data – Size 038 (1250 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	6.0	1.8	4.2	65/55	34600	28300	1.991	41400	17.4	45000	2.418	36700	99	5.45
		1.8	4.2	70/59	36900	27800	2.014	43800	18.3	44900	2.502	36400	103	5.25
		1.8	4.2	75/63	39200	28600	2.038	46200	19.2	44700	2.606	35800	108	5.02
		1.8	4.2	80/67	41600	29300	2.062	48600	20.2	44500	2.711	35200	113	4.81
		1.8	4.2	85/71	43900	30100	2.086	51000	21.0					
	9.0	3.9	8.8	65/55	34800	28400	1.974	41500	17.6	46200	2.443	37900	100	5.54
		3.9	8.8	70/59	37100	27900	1.996	43900	18.6	46100	2.527	37500	104	5.34
		3.9	8.8	75/63	39400	28600	2.020	46300	19.5	46000	2.631	37000	109	5.12
		3.9	8.8	80/67	41700	29400	2.044	48700	20.4	45800	2.736	36500	114	4.90
		3.9	8.8	85/71	44000	30100	2.068	51100	21.3					
	12.0	6.5	14.8	65/55	34900	28400	1.956	41600	17.8	47500	2.468	39100	101	5.64
		6.5	14.8	70/59	37200	27900	1.979	44000	18.8	47400	2.552	38700	105	5.44
		6.5	14.8	75/63	39500	28700	2.003	46300	19.7	47200	2.656	38100	110	5.20
		6.5	14.8	80/67	41800	29400	2.027	48700	20.6	47100	2.761	37700	115	5.00
		6.5	14.8	85/71	44200	30200	2.051	51200	21.6					
80	6.0	1.8	4.1	65/55	33300	27700	2.199	40800	15.1	48500	2.497	40000	102	5.69
		1.8	4.1	70/59	35600	27200	2.221	43200	16.0	48300	2.581	39500	106	5.48
		1.8	4.1	75/63	38000	28000	2.245	45700	16.9	48200	2.686	39000	111	5.25
		1.8	4.1	80/67	40300	28700	2.269	48000	17.8	48000	2.790	38500	115	5.04
		1.8	4.1	85/71	42600	29500	2.293	50400	18.6					
	9.0	3.8	8.6	65/55	33500	27800	2.181	40900	15.4	49700	2.522	41100	103	5.77
		3.8	8.6	70/59	35800	27300	2.204	43300	16.2	49600	2.606	40700	107	5.57
		3.8	8.6	75/63	38100	28000	2.228	45700	17.1	49400	2.711	40100	111	5.34
		3.8	8.6	80/67	40400	28800	2.252	48100	17.9	49300	2.815	39700	116	5.13
		3.8	8.6	85/71	42700	29500	2.276	50500	18.8					
	12.0	6.4	14.6	65/55	33600	27800	2.164	41000	15.5	51000	2.547	42300	104	5.86
		6.4	14.6	70/59	35900	27300	2.187	43400	16.4	50800	2.631	41800	107	5.65
		6.4	14.6	75/63	38300	28100	2.211	45800	17.3	50700	2.736	41400	112	5.43
		6.4	14.6	80/67	40600	28900	2.235	48200	18.2	50500	2.841	40800	117	5.20
		6.4	14.6	85/71	42900	29600	2.259	50600	19.0					
90	6.0	1.8	4.1	65/55	31400	26900	2.438	39700	12.9	51200	2.573	42400	104	5.83
		1.8	4.1	70/59	33700	26400	2.460	42100	13.7	51100	2.657	42000	108	5.63
		1.8	4.1	75/63	36000	27100	2.484	44500	14.5	50900	2.761	41500	112	5.40
		1.8	4.1	80/67	38300	27900	2.508	46900	15.3	50800	2.866	41000	117	5.19
		1.8	4.1	85/71	40600	28600	2.532	49200	16.0					
	9.0	3.7	8.5	65/55	31500	26900	2.420	39800	13.0	52500	2.598	43600	105	5.92
		3.7	8.5	70/59	33800	26400	2.443	42100	13.8	52300	2.682	43100	109	5.71
		3.7	8.5	75/63	36200	27200	2.467	44600	14.7	52200	2.786	42700	113	5.49
		3.7	8.5	80/67	38500	27900	2.491	47000	15.5	52000	2.891	42100	118	5.27
		3.7	8.5	85/71	40800	28700	2.515	49400	16.2					
	12.0	6.3	14.3	65/55	31700	27000	2.403	39900	13.2	53700	2.623	44700	106	5.99
		6.3	14.3	70/59	34000	26500	2.426	42300	14.0	53600	2.707	44400	109	5.80
		6.3	14.3	75/63	36300	27200	2.450	44700	14.8	53400	2.811	43800	114	5.56
		6.3	14.3	80/67	38600	28000	2.474	47000	15.6	53300	2.916	43300	119	5.35
		6.3	14.3	85/71	40900	28800	2.498	49400	16.4					
100	6.0	1.8	4.0	65/55	29200	26100	2.709	38400	10.8					
		1.8	4.0	70/59	31500	25600	2.731	40800	11.5					
		1.8	4.0	75/63	33900	26300	2.755	43300	12.3					
		1.8	4.0	80/67	36200	27100	2.779	45700	13.0					
		1.8	4.0	85/71	38500	27800	2.803	48100	13.7					
	9.0	3.7	8.4	65/55	29400	26100	2.691	38600	10.9					
		3.7	8.4	70/59	31700	25600	2.714	41000	11.7					
		3.7	8.4	75/63	34000	26400	2.738	43300	12.4					
		3.7	8.4	80/67	36300	27100	2.762	45700	13.1					
		3.7	8.4	85/71	38600	27900	2.786	48100	13.9					
	12.0	6.2	14.1	65/55	29500	26200	2.674	38600	11.0					
		6.2	14.1	70/59	31800	25700	2.697	41000	11.8					
		6.2	14.1	75/63	34200	26400	2.721	43500	12.6					
		6.2	14.1	80/67	36500	27200	2.745	45900	13.3					
		6.2	14.1	85/71	38800	27900	2.769	48300	14.0					
110	6.0	1.7	4.0	65/55	27600	25500	3.009	37900	9.2					
		1.7	4.0	70/59	29900	25000	3.031	40200	9.9					
		1.7	4.0	75/63	32300	25800	3.055	42700	10.6					
		1.7	4.0	80/67	34600	26500	3.079	45100	11.2					
		1.7	4.0	85/71	36900	27300	3.103	47500	11.9					
	9.0	3.6	8.3	65/55	27800	25600	2.991	38000	9.3					
		3.6	8.3	70/59	30100	25100	3.014	40400	10.0					
		3.6	8.3	75/63	32400	25800	3.038	42800	10.7					
		3.6	8.3	80/67	34700	26600	3.062	45200	11.3					
		3.6	8.3	85/71	37000	27300	3.086	47500	12.0					
	12.0	6.1	14.0	65/55	27900	25600	2.974	38100	9.4					
		6.1	14.0	70/59	30200	25100	2.997	40400	10.1					
		6.1	14.0	75/63	32600	25900	3.021	42900	10.8					
		6.1	14.0	80/67	34900	26600	3.045	45300	11.5					
		6.1	14.0	85/71	37200	27400	3.069	47700	12.1					

Tint = Operation Not Recommended

Notes:

1. *Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.*
2. *Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.*
3. *See performance correction tables for operating conditions other than those listed.*
4. *Interpolation is permissible; extrapolation is not.*
5. *For performance data outside the EAT listed, refer to the McQuay SelectTools selection program*
6. *Table does not reflect fan or pump power corrections for AHRI/ISO conditions.*
7. *Data is base on unit at full load operation..*

Capacity Data – Size 044 (1400 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	7.0	1.1	2.5	65/55	Tint = Operation Not Recommended (See "Appendix-A" on page 72 for table legend)					25400	2.399	17200	83	3.10
		1.1	2.5	70/59						25300	2.504	16800	87	2.96
		1.1	2.5	75/63						25100	2.636	16100	92	2.79
		1.1	2.5	80/67						24900	2.768	15500	96	2.63
		1.1	2.5	85/71										
	10.5	2.3	5.4	65/55						27200	2.433	18900	84	3.27
		2.3	5.4	70/59						27000	2.539	18300	88	3.11
		2.3	5.4	75/63						26800	2.670	17700	93	2.94
		2.3	5.4	80/67						26600	2.802	17000	97	2.78
		2.3	5.4	85/71										
	14.0	4.0	9.2	65/55						28900	2.467	20500	85	3.43
		4.0	9.2	70/59						28800	2.573	20000	89	3.28
		4.0	9.2	75/63						28600	2.705	19400	94	3.10
		4.0	9.2	80/67						28400	2.837	18700	99	2.93
		4.0	9.2	85/71										
30	7.0	1.1	2.4	65/55						30200	2.453	21800	86	3.60
		1.1	2.4	70/59	39100	28400	1.560	44400	25.1	30100	2.558	21400	90	3.45
		1.1	2.4	75/63	41400	29300	1.588	46800	26.1	29900	2.690	20700	95	3.25
		1.1	2.4	80/67	43700	30200	1.616	49200	27.0	29700	2.822	20100	100	3.08
		1.1	2.4	85/71	46100	31100	1.644	51700	28.0					
	10.5	2.3	5.2	65/55	37000	29000	1.510	42200	24.5	32000	2.487	23500	87	3.77
		2.3	5.2	70/59	39300	28500	1.537	44500	25.6	31800	2.593	23000	91	3.59
		2.3	5.2	75/63	41600	29400	1.565	46900	26.6	31600	2.725	22300	96	3.40
		2.3	5.2	80/67	43900	30300	1.593	49300	27.6	31400	2.857	21600	101	3.22
		2.3	5.2	85/71	46300	31200	1.621	51800	28.6					
	14.0	3.9	8.9	65/55	37200	29100	1.487	42300	25.0	33700	2.522	25100	88	3.91
		3.9	8.9	70/59	39500	28600	1.513	44700	26.1	33500	2.627	24500	92	3.73
		3.9	8.9	75/63	41800	29500	1.541	47100	27.1	33300	2.759	23900	97	3.53
		3.9	8.9	80/67	44100	30400	1.569	49500	28.1	33200	2.891	23300	102	3.36
		3.9	8.9	85/71	46500	31300	1.597	52000	29.1					
40	7.0	1.0	2.4	65/55	39300	30900	1.734	45200	22.7	35100	2.531	26500	89	4.06
		1.0	2.4	70/59	41600	30400	1.761	47600	23.6	35000	2.637	26000	93	3.89
		1.0	2.4	75/63	43900	31300	1.789	50000	24.5	34800	2.769	25300	98	3.68
		1.0	2.4	80/67	46300	32200	1.816	52500	25.5	34600	2.901	24700	103	3.49
		1.0	2.4	85/71	48600	33000	1.844	54900	26.4					
	10.5	2.2	5.0	65/55	39500	31000	1.710	45300	23.1	36900	2.566	28100	90	4.21
		2.2	5.0	70/59	41800	30500	1.737	47700	24.1	36700	2.671	27600	94	4.02
		2.2	5.0	75/63	44100	31300	1.765	50100	25.0	36500	2.803	26900	99	3.81
		2.2	5.0	80/67	46500	32200	1.793	52600	25.9	36300	2.935	26300	104	3.62
		2.2	5.0	85/71	48800	33100	1.821	55000	26.8					
	14.0	3.8	8.6	65/55	39700	31000	1.687	45500	23.5	38600	2.600	29700	91	4.35
		3.8	8.6	70/59	42000	30500	1.713	47800	24.5	38500	2.706	29300	95	4.17
		3.8	8.6	75/63	44300	31400	1.741	50200	25.4	38300	2.838	28600	100	3.95
		3.8	8.6	80/67	46700	32300	1.769	52700	26.4	38100	2.969	28000	105	3.76
		3.8	8.6	85/71	49000	33200	1.797	55100	27.3					
50	7.0	1.0	2.3	65/55	40000	31500	1.924	46600	20.8	40100	2.639	31100	92	4.45
		1.0	2.3	70/59	42300	31000	1.951	49000	21.7	39900	2.745	30500	96	4.26
		1.0	2.3	75/63	44600	31900	1.979	51400	22.5	39700	2.877	29900	101	4.04
		1.0	2.3	80/67	47000	32800	2.007	53800	23.4	39600	3.009	29300	106	3.85
		1.0	2.3	85/71	49300	33700	2.035	56200	24.2					
	10.5	2.1	4.9	65/55	40200	31600	1.901	46700	21.1	41800	2.674	32700	93	4.58
		2.1	4.9	70/59	42500	31100	1.927	49100	22.1	41700	2.779	32200	97	4.39
		2.1	4.9	75/63	44800	32000	1.955	51500	22.9	41500	2.911	31600	102	4.17
		2.1	4.9	80/67	47200	32900	1.983	54000	23.8	41300	3.043	30900	107	3.97
		2.1	4.9	85/71	49500	33800	2.011	56400	24.6					
	14.0	3.7	8.4	65/55	40400	31700	1.877	46800	21.5	43600	2.708	34400	95	4.71
		3.7	8.4	70/59	42700	31200	1.904	49200	22.4	43400	2.814	33800	99	4.52
		3.7	8.4	75/63	45000	32100	1.931	51600	23.3	43200	2.946	33100	103	4.29
		3.7	8.4	80/67	47400	32900	1.959	54100	24.2	43000	3.077	32500	108	4.09
		3.7	8.4	85/71	49700	33800	1.987	56500	25.0					
60	7.0	1.0	2.3	65/55	39800	31600	2.118	47000	18.8	45100	2.767	35700	96	4.77
		1.0	2.3	70/59	42100	31100	2.144	49400	19.6	44900	2.873	35100	100	4.58
		1.0	2.3	75/63	44500	32000	2.172	51900	20.5	44700	3.004	34400	104	4.36
		1.0	2.3	80/67	46800	32900	2.200	54300	21.3	44500	3.136	33800	109	4.15
		1.0	2.3	85/71	49100	33700	2.228	56700	22.0					
	10.5	2.1	4.8	65/55	40000	31700	2.094	47100	19.1	46800	2.801	37200	97	4.89
		2.1	4.8	70/59	42400	31200	2.121	49600	20.0	46600	2.907	36700	101	4.69
		2.1	4.8	75/63	44700	32000	2.149	52000	20.8	46400	3.039	36000	106	4.47
		2.1	4.8	80/67	47000	32900	2.177	54400	21.6	46300	3.171	35500	110	4.28
		2.1	4.8	85/71	49300	33800	2.204	56800	22.4					
	14.0	3.6	8.2	65/55	40200	31700	2.071	47300	19.4	48500	2.836	38800	98	5.01
		3.6	8.2	70/59	42600	31200	2.097	49800	20.3	48400	2.941	38400	102	4.82
		3.6	8.2	75/63	44900	32100	2.125	52200	21.1	48200	3.073	37700	107	4.59
		3.6	8.2	80/67	47200	33000	2.153	54500	21.9	48000	3.205	37100	112	4.39
		3.6	8.2	85/71	49500	33900	2.181	56900	22.7					

Capacity Data – Size 044 (1400 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	7.0	1.0	2.2	65/55	39300	31400	2.328	47200	16.9	49900	2.900	40000	99	5.04
		1.0	2.2	70/59	41600	30900	2.354	49600	17.7	49700	3.006	39400	103	4.84
		1.0	2.2	75/63	43900	31800	2.382	52000	18.4	49600	3.138	38900	108	4.63
		1.0	2.2	80/67	46200	32700	2.410	54400	19.2	49400	3.270	38200	112	4.42
		1.0	2.2	85/71	48500	33600	2.438	56800	19.9					
	10.5	2.1	4.7	65/55	39500	31500	2.304	47400	17.1	51600	2.935	41600	100	5.15
		2.1	4.7	70/59	41800	31000	2.331	49800	17.9	51500	3.040	41100	104	4.96
		2.1	4.7	75/63	44100	31900	2.358	52100	18.7	51300	3.172	40500	109	4.74
		2.1	4.7	80/67	46400	32800	2.386	54500	19.4	51100	3.304	39800	114	4.53
		2.1	4.7	85/71	48700	33700	2.414	56900	20.2					
	14.0	3.5	8.0	65/55	39700	31600	2.280	47500	17.4	53400	2.969	43300	101	5.27
		3.5	8.0	70/59	42000	31100	2.307	49900	18.2	53200	3.075	42700	105	5.07
		3.5	8.0	75/63	44300	32000	2.335	52300	19.0	53000	3.207	42100	110	4.84
		3.5	8.0	80/67	46600	32900	2.363	54700	19.7	52900	3.339	41500	115	4.64
		3.5	8.0	85/71	49000	33800	2.391	57200	20.5					
80	7.0	0.9	2.2	65/55	38300	31100	2.567	47100	14.9	54600	3.033	44200	102	5.27
		0.9	2.2	70/59	40600	30600	2.594	49500	15.7	54400	3.138	43700	106	5.08
		0.9	2.2	75/63	42900	31500	2.622	51800	16.4	54200	3.270	43000	111	4.85
		0.9	2.2	80/67	45300	32400	2.649	54300	17.1	54000	3.402	42400	116	4.65
		0.9	2.2	85/71	47600	33300	2.677	56700	17.8					
	10.5	2.0	4.6	65/55	38500	31200	2.543	47200	15.1	56300	3.067	45800	103	5.38
		2.0	4.6	70/59	40800	30700	2.570	49600	15.9	56200	3.173	45400	107	5.19
		2.0	4.6	75/63	43100	31600	2.598	52000	16.6	56000	3.305	44700	112	4.96
		2.0	4.6	80/67	45500	32500	2.626	54500	17.3	55800	3.437	44100	117	4.75
		2.0	4.6	85/71	47800	33400	2.654	56900	18.0					
	14.0	3.4	7.9	65/55	38700	31300	2.520	47300	15.4	58100	3.102	47500	104	5.48
		3.4	7.9	70/59	41000	30800	2.546	49700	16.1	57900	3.207	47000	108	5.29
		3.4	7.9	75/63	43300	31700	2.574	52100	16.8	57700	3.339	46300	113	5.06
		3.4	7.9	80/67	45700	32600	2.602	54600	17.6	57500	3.471	45700	118	4.85
		3.4	7.9	85/71	48000	33500	2.630	57000	18.3					
90	7.0	0.9	2.1	65/55	36800	30600	2.849	46500	12.9	59000	3.176	48200	105	5.44
		0.9	2.1	70/59	39100	30100	2.876	48900	13.6	58800	3.282	47600	109	5.25
		0.9	2.1	75/63	41500	31000	2.904	51400	14.3	58600	3.414	46900	114	5.03
		0.9	2.1	80/67	43800	31900	2.932	53800	14.9	58400	3.546	46300	118	4.82
		0.9	2.1	85/71	46100	32700	2.960	56200	15.6					
	10.5	2.0	4.5	65/55	37000	30600	2.826	46600	13.1	60700	3.211	49700	106	5.54
		2.0	4.5	70/59	39300	30200	2.852	49000	13.8	60600	3.316	49300	110	5.35
		2.0	4.5	75/63	41700	31000	2.880	51500	14.5	60400	3.448	48600	115	5.13
		2.0	4.5	80/67	44000	31900	2.908	53900	15.1	60200	3.580	48000	120	4.92
		2.0	4.5	85/71	46300	32800	2.936	56300	15.8					
	14.0	3.4	7.7	65/55	37200	30700	2.802	46800	13.3	62500	3.245	51400	107	5.64
		3.4	7.7	70/59	39600	30200	2.828	49300	14.0	62300	3.351	50900	111	5.44
		3.4	7.7	75/63	41900	31100	2.856	51600	14.7	62100	3.482	50200	116	5.22
		3.4	7.7	80/67	44200	32000	2.884	54000	15.3	61900	3.614	49600	121	5.02
		3.4	7.7	85/71	46500	32900	2.912	56400	16.0					
100	7.0	0.9	2.1	65/55	34700	29800	3.187	45600	10.9					
		0.9	2.1	70/59	37000	29300	3.214	48000	11.5					
		0.9	2.1	75/63	39400	30100	3.242	50500	12.2					
		0.9	2.1	80/67	41700	31000	3.270	52900	12.8					
		0.9	2.1	85/71	44000	31900	3.298	55300	13.3					
	10.5	2.0	4.5	65/55	34900	29800	3.164	45700	11.0					
		2.0	4.5	70/59	37200	29300	3.190	48100	11.7					
		2.0	4.5	75/63	39600	30200	3.218	50600	12.3					
		2.0	4.5	80/67	41900	31100	3.246	53000	12.9					
		2.0	4.5	85/71	44200	32000	3.274	55400	13.5					
	14.0	3.3	7.6	65/55	35100	29900	3.140	45800	11.2					
		3.3	7.6	70/59	37400	29400	3.166	48200	11.8					
		3.3	7.6	75/63	39800	30300	3.194	50700	12.5					
		3.3	7.6	80/67	42100	31200	3.222	53100	13.1					
		3.3	7.6	85/71	44400	32100	3.250	55500	13.7					
110	7.0	0.9	2.1	65/55	32000	28800	3.594	44300	8.9					
		0.9	2.1	70/59	34300	28300	3.621	46700	9.5					
		0.9	2.1	75/63	36700	29200	3.649	49200	10.1					
		0.9	2.1	80/67	39000	30100	3.677	51500	10.6					
		0.9	2.1	85/71	41300	31000	3.705	53900	11.1					
	10.5	1.9	4.4	65/55	32200	28900	3.571	44400	9.0					
		1.9	4.4	70/59	34500	28400	3.597	46800	9.6					
		1.9	4.4	75/63	36900	29300	3.625	49300	10.2					
		1.9	4.4	80/67	39200	30200	3.653	51700	10.7					
		1.9	4.4	85/71	41500	31100	3.681	54100	11.3					
	14.0	3.3	7.5	65/55	32400	29000	3.547	44500	9.1					
		3.3	7.5	70/59	34800	28500	3.573	47000	9.7					
		3.3	7.5	75/63	37100	29400	3.601	49400	10.3					
		3.3	7.5	80/67	39400	30300	3.629	51800	10.9					
		3.3	7.5	85/71	41700	31200	3.657	54200	11.4					

Tint = Operation Not Recommended

Notes:

1. *Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.*
2. *Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.*
3. *See performance correction tables for operating conditions other than those listed.*
4. *Interpolation is permissible; extrapolation is not.*
5. *For performance data outside the EAT listed, refer to the McQuay SelectTools selection program*
6. *Table does not reflect fan or pump power corrections for AHRI/ISO conditions.*
7. *Data is base on unit at full load operation..*

Capacity Data – Size 049 (1600 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	8.0	1.4	3.2	65/55	Tint = Operation Not Recommended (See "Appendix-A" on page 72 for table legend)					27800	2.575	19000	82	3.16
		1.4	3.2	70/59						27500	2.701	18300	86	2.98
		1.4	3.2	75/63						27100	2.858	17300	91	2.78
		1.4	3.2	80/67						26800	3.016	16500	95	2.60
		1.4	3.2	85/71										
	12.0	3.0	6.9	65/55						30000	2.620	21100	83	3.35
		3.0	6.9	70/59						29700	2.746	20300	87	3.17
		3.0	6.9	75/63						29400	2.903	19500	92	2.97
		3.0	6.9	80/67						29000	3.061	18600	97	2.77
		3.0	6.9	85/71										
	16.0	5.1	11.7	65/55						32300	2.664	23200	85	3.55
		5.1	11.7	70/59						32000	2.790	22500	88	3.36
		5.1	11.7	75/63						31600	2.948	21500	93	3.14
		5.1	11.7	80/67						31300	3.105	20700	98	2.95
		5.1	11.7	85/71										
30	8.0	1.4	3.1	65/55						33300	2.716	24000	85	3.59
		1.4	3.1	70/59	42900	32100	1.763	48900	24.3	33000	2.842	23300	89	3.40
		1.4	3.1	75/63	45700	32900	1.796	51800	25.4	32600	3.000	22400	94	3.18
		1.4	3.1	80/67	48500	33700	1.829	54700	26.5	32300	3.157	21500	99	3.00
		1.4	3.1	85/71	51300	34500	1.862	57700	27.6					
	12.0	2.9	6.7	65/55	40400	33100	1.701	46200	23.8	35500	2.761	26100	86	3.76
		2.9	6.7	70/59	43200	32200	1.732	49100	24.9	35200	2.887	25300	90	3.57
		2.9	6.7	75/63	46000	33000	1.765	52000	26.1	34900	3.045	24500	95	3.36
		2.9	6.7	80/67	48800	33800	1.798	54900	27.1	34500	3.202	23600	100	3.15
		2.9	6.7	85/71	51600	34600	1.831	57800	28.2					
	16.0	5.0	11.4	65/55	40700	33200	1.670	46400	24.4	37800	2.806	28200	88	3.94
		5.0	11.4	70/59	43500	32300	1.701	49300	25.6	37500	2.932	27500	92	3.75
		5.0	11.4	75/63	46200	33100	1.734	52100	26.6	37100	3.089	26600	96	3.52
		5.0	11.4	80/67	49000	33900	1.767	55000	27.7	36800	3.247	25700	101	3.32
		5.0	11.4	85/71	51800	34700	1.799	57900	28.8					
40	8.0	1.3	3.0	65/55	43200	35000	1.971	49900	21.9	39000	2.853	29300	88	4.00
		1.3	3.0	70/59	46000	34100	2.002	52800	23.0	38700	2.979	28500	92	3.80
		1.3	3.0	75/63	48800	34900	2.035	55700	24.0	38300	3.136	27600	97	3.58
		1.3	3.0	80/67	51600	35700	2.068	58700	25.0	38000	3.294	26800	102	3.38
		1.3	3.0	85/71	54400	36500	2.100	61600	25.9					
	12.0	2.8	6.5	65/55	43500	35100	1.940	50100	22.4	41200	2.898	31300	90	4.16
		2.8	6.5	70/59	46300	34200	1.971	53000	23.5	40900	3.024	30600	94	3.96
		2.8	6.5	75/63	49000	35000	2.004	55800	24.5	40600	3.181	29700	98	3.74
		2.8	6.5	80/67	51800	35800	2.036	58700	25.4	40200	3.339	28800	103	3.53
		2.8	6.5	85/71	54600	36600	2.069	61700	26.4					
	16.0	4.8	11.0	65/55	43700	35200	1.908	50200	22.9	43400	2.943	33400	91	4.32
		4.8	11.0	70/59	46500	34400	1.940	53100	24.0	43200	3.069	32700	95	4.12
		4.8	11.0	75/63	49300	35100	1.972	56000	25.0	42800	3.226	31800	100	3.88
		4.8	11.0	80/67	52100	35900	2.005	58900	26.0	42500	3.384	31000	104	3.68
		4.8	11.0	85/71	54900	36700	2.038	61900	26.9					
50	8.0	1.3	3.0	65/55	44400	36400	2.193	51900	20.2	44700	2.985	34500	92	4.38
		1.3	3.0	70/59	47100	35600	2.224	54700	21.2	44400	3.111	33800	96	4.18
		1.3	3.0	75/63	49900	36400	2.257	57600	22.1	44100	3.268	32900	100	3.95
		1.3	3.0	80/67	52700	37100	2.290	60500	23.0	43700	3.426	32000	105	3.73
		1.3	3.0	85/71	55500	37900	2.322	63400	23.9					
	12.0	2.8	6.3	65/55	44600	36500	2.162	52000	20.6	46900	3.029	36600	93	4.53
		2.8	6.3	70/59	47400	35700	2.193	54900	21.6	46600	3.155	35800	97	4.32
		2.8	6.3	75/63	50200	36500	2.226	57800	22.6	46300	3.313	35000	102	4.09
		2.8	6.3	80/67	53000	37200	2.258	60700	23.5	46000	3.470	34200	106	3.88
		2.8	6.3	85/71	55700	38000	2.291	63500	24.3					
	16.0	4.7	10.7	65/55	44900	36700	2.131	52200	21.1	49200	3.074	38700	94	4.69
		4.7	10.7	70/59	47600	35800	2.162	55000	22.0	48900	3.200	38000	98	4.47
		4.7	10.7	75/63	50400	36600	2.195	57900	23.0	48600	3.358	37100	103	4.24
		4.7	10.7	80/67	53200	37300	2.227	60800	23.9	48200	3.515	36200	108	4.02
		4.7	10.7	85/71	56000	38100	2.260	63700	24.8					
60	8.0	1.3	2.9	65/55	44300	36900	2.414	52500	18.4	50300	3.111	39700	95	4.73
		1.3	2.9	70/59	47000	36000	2.445	55300	19.2	50000	3.237	39000	99	4.52
		1.3	2.9	75/63	49800	36800	2.478	58300	20.1	49700	3.395	38100	104	4.29
		1.3	2.9	80/67	52600	37600	2.510	61200	21.0	49300	3.552	37200	108	4.06
		1.3	2.9	85/71	55400	38400	2.543	64100	21.8					
	12.0	2.7	6.1	65/55	44500	37000	2.382	52600	18.7	52500	3.156	41700	96	4.87
		2.7	6.1	70/59	47300	36100	2.414	55500	19.6	52200	3.282	41000	100	4.66
		2.7	6.1	75/63	50100	36900	2.446	58400	20.5	51900	3.440	40200	105	4.42
		2.7	6.1	80/67	52900	37700	2.479	61400	21.3	51600	3.597	39300	110	4.20
		2.7	6.1	85/71	55700	38500	2.512	64300	22.2					
	16.0	4.6	10.5	65/55	44800	37100	2.351	52800	19.1	54800	3.201	43900	98	5.01
		4.6	10.5	70/59	47600	36200	2.382	55700	20.0	54500	3.327	43100	101	4.80
		4.6	10.5	75/63	50400	37000	2.415	58600	20.9	54100	3.485	42200	106	4.55
		4.6	10.5	80/67	53100	37800	2.448	61500	21.7	53800	3.642	41400	111	4.33
		4.6	10.5	85/71	55900	38600	2.481	64400	22.5					

Capacity Data – Size 049 (1600 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	8.0	1.2	2.8	65/55	43400	36500	2.648	52400	16.4	55600	3.233	44600	98	5.04
		1.2	2.8	70/59	46200	35600	2.679	55300	17.2	55300	3.359	43800	102	4.82
		1.2	2.8	75/63	48900	36400	2.712	58200	18.0	55000	3.517	43000	107	4.58
		1.2	2.8	80/67	51700	37200	2.745	61100	18.8	54600	3.674	42100	111	4.35
		1.2	2.8	85/71	54500	38000	2.778	64000	19.6					
	12.0	2.6	6.0	65/55	43700	36600	2.617	52600	16.7	57800	3.278	46600	99	5.16
		2.6	6.0	70/59	46400	35700	2.648	55400	17.5	57500	3.404	45900	103	4.95
		2.6	6.0	75/63	49200	36500	2.681	58400	18.4	57200	3.562	45000	108	4.70
		2.6	6.0	80/67	52000	37300	2.714	61300	19.2	56900	3.719	44200	113	4.48
		2.6	6.0	85/71	54800	38100	2.747	64200	19.9					
	16.0	4.5	10.3	65/55	43900	36700	2.586	52700	17.0	60100	3.323	48800	101	5.30
		4.5	10.3	70/59	46700	35800	2.617	55600	17.8	59800	3.449	48000	104	5.08
		4.5	10.3	75/63	49500	36600	2.650	58500	18.7	59400	3.606	47100	109	4.82
		4.5	10.3	80/67	52200	37400	2.683	61400	19.5	59100	3.764	46300	114	4.60
		4.5	10.3	85/71	55000	38200	2.716	64300	20.3					
80	8.0	1.2	2.8	65/55	41900	35600	2.912	51800	14.4	60400	3.350	49000	101	5.28
		1.2	2.8	70/59	44700	34800	2.943	54700	15.2	60100	3.476	48200	105	5.06
		1.2	2.8	75/63	47400	35500	2.976	57600	15.9	59800	3.634	47400	109	4.82
		1.2	2.8	80/67	50200	36300	3.009	60500	16.7	59500	3.791	46600	114	4.60
		1.2	2.8	85/71	53000	37100	3.042	63400	17.4					
	12.0	2.6	5.9	65/55	42100	35700	2.881	51900	14.6	62700	3.395	51100	102	5.41
		2.6	5.9	70/59	44900	34900	2.912	54800	15.4	62400	3.521	50400	106	5.19
		2.6	5.9	75/63	47700	35600	2.945	57800	16.2	62000	3.679	49400	111	4.93
		2.6	5.9	80/67	50500	36400	2.978	60700	17.0	61700	3.836	48600	116	4.71
		2.6	5.9	85/71	53300	37200	3.010	63600	17.7					
	16.0	4.4	10.1	65/55	42400	35800	2.850	52100	14.9	64900	3.440	53200	103	5.52
		4.4	10.1	70/59	45200	35000	2.881	55000	15.7	64600	3.566	52400	107	5.30
		4.4	10.1	75/63	48000	35800	2.914	57900	16.5	64300	3.723	51600	112	5.06
		4.4	10.1	80/67	50700	36500	2.947	60800	17.2	64000	3.881	50800	117	4.83
		4.4	10.1	85/71	53500	37300	2.979	63700	18.0					
90	8.0	1.2	2.7	65/55	39800	34700	3.220	50800	12.4	64600	3.462	52800	103	5.46
		1.2	2.7	70/59	42600	33800	3.251	53700	13.1	64400	3.588	52200	107	5.26
		1.2	2.7	75/63	45400	34600	3.284	56600	13.8	64000	3.746	51200	112	5.00
		1.2	2.7	80/67	48200	35400	3.317	59500	14.5	63700	3.903	50400	117	4.78
		1.2	2.7	85/71	51000	36200	3.350	62400	15.2					
	12.0	2.5	5.8	65/55	40100	34800	3.189	51000	12.6	66900	3.507	54900	105	5.59
		2.5	5.8	70/59	42900	33900	3.220	53900	13.3	66600	3.633	54200	108	5.37
		2.5	5.8	75/63	45600	34700	3.253	56700	14.0	66300	3.791	53400	113	5.12
		2.5	5.8	80/67	48400	35500	3.286	59600	14.7	65900	3.948	52400	118	4.89
		2.5	5.8	85/71	51200	36300	3.318	62500	15.4					
	16.0	4.3	9.9	65/55	40400	34900	3.158	51200	12.8	69100	3.552	57000	106	5.70
		4.3	9.9	70/59	43100	34000	3.189	54000	13.5	68900	3.678	56300	110	5.49
		4.3	9.9	75/63	45900	34800	3.222	56900	14.2	68500	3.836	55400	114	5.23
		4.3	9.9	80/67	48700	35600	3.254	59800	15.0	68200	3.993	54600	119	5.00
		4.3	9.9	85/71	51500	36400	3.287	62700	15.7					
100	8.0	1.2	2.7	65/55	37300	33800	3.587	49500	10.4					
		1.2	2.7	70/59	40100	32900	3.619	52500	11.1					
		1.2	2.7	75/63	42900	33700	3.651	55400	11.8					
		1.2	2.7	80/67	45600	34500	3.684	58200	12.4					
		1.2	2.7	85/71	48400	35300	3.717	61100	13.0					
	12.0	2.5	5.7	65/55	37600	33900	3.556	49700	10.6					
		2.5	5.7	70/59	40300	33000	3.587	52500	11.2					
		2.5	5.7	75/63	43100	33800	3.620	55500	11.9					
		2.5	5.7	80/67	45900	34600	3.653	58400	12.6					
		2.5	5.7	85/71	48700	35400	3.686	61300	13.2					
	16.0	4.3	9.8	65/55	37800	34000	3.525	49800	10.7					
		4.3	9.8	70/59	40600	33100	3.556	52700	11.4					
		4.3	9.8	75/63	43400	33900	3.589	55600	12.1					
		4.3	9.8	80/67	46200	34700	3.622	58600	12.8					
		4.3	9.8	85/71	48900	35500	3.655	61400	13.4					
110	8.0	1.2	2.7	65/55	34400	32700	4.029	48200	8.5					
		1.2	2.7	70/59	37200	31800	4.061	51100	9.2					
		1.2	2.7	75/63	39900	32600	4.093	53900	9.7					
		1.2	2.7	80/67	42700	33400	4.126	56800	10.3					
		1.2	2.7	85/71	45500	34200	4.159	59700	10.9					
	12.0	2.5	5.7	65/55	34700	32800	3.998	48300	8.7					
		2.5	5.7	70/59	37400	31900	4.029	51200	9.3					
		2.5	5.7	75/63	40200	32700	4.062	54100	9.9					
		2.5	5.7	80/67	43000	33500	4.095	57000	10.5					
		2.5	5.7	85/71	45800	34300	4.128	59900	11.1					
	16.0	4.2	9.7	65/55	34900	32900	3.967	48400	8.8					
		4.2	9.7	70/59	37700	32000	3.998	51300	9.4					
		4.2	9.7	75/63	40500	32800	4.031	54300	10.0					
		4.2	9.7	80/67	43300	33600	4.064	57200	10.7					
		4.2	9.7	85/71	46000	34400	4.097	60000	11.2					

Tint = Operation Not Recommended

Notes:

1. *Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.*
2. *Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.*
3. *See performance correction tables for operating conditions other than those listed.*
4. *Interpolation is permissible; extrapolation is not.*
5. *For performance data outside the EAT listed, refer to the McQuay SelectTools selection program*
6. *Table does not reflect fan or pump power corrections for AHRI/ISO conditions.*
7. *Data is base on unit at full load operation..*

Capacity Data – Size 064 (2000 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
		2.2	5.1	65/55						35900	3.547	23800	83	2.96
		2.2	5.1	70/59						35700	3.690	23100	86	2.83
	10.0	2.2	5.1	75/63						35500	3.868	22300	91	2.69
		2.2	5.1	80/67						35300	4.047	21500	96	2.55
		2.2	5.1	85/71										
		4.9	11.1	65/55						39300	3.616	27000	84	3.18
		4.9	11.1	70/59						39100	3.759	26300	88	3.05
20	**15.0**	4.9	11.1	75/63	Tint = Operation Not Recommended					38900	3.938	25500	93	2.89
		4.9	11.1	80/67	(See "Appendix-A" on page 72 for table legend)					38700	4.117	24600	98	2.75
		4.9	11.1	85/71										
		8.4	19.2	65/55						42700	3.686	30100	86	3.39
		8.4	19.2	70/59						42600	3.829	29500	90	3.26
	20.0	8.4	19.2	75/63						42300	4.007	28600	94	3.09
		8.4	19.2	80/67						42100	4.186	27800	99	2.94
		8.4	19.2	85/71										
		2.2	4.9	65/55						43400	3.636	31000	86	3.50
		2.2	4.9	70/59	41700	34000	2.026	48600	20.6	43200	3.779	30300	90	3.35
	10.0	2.2	4.9	75/63	45600	35300	2.066	52700	22.1	43000	3.958	29500	95	3.18
		2.2	4.9	80/67	49600	36500	2.106	56800	23.6	42800	4.137	28700	100	3.03
		2.2	4.9	85/71	53500	37800	2.146	60800	24.9					
		4.7	10.7	65/55	38200	34900	1.939	44800	19.7	46800	3.706	34200	88	3.70
		4.7	10.7	70/59	42100	34200	1.977	48800	21.3	46600	3.849	33500	91	3.55
30	**15.0**	4.7	10.7	75/63	46100	35400	2.017	53000	22.9	46400	4.028	32700	96	3.37
		4.7	10.7	80/67	50000	36700	2.058	57000	24.3	46200	4.206	31800	101	3.22
		4.7	10.7	85/71	53900	38000	2.098	61100	25.7					
		8.1	18.6	65/55	38600	35000	1.891	45100	20.4	50200	3.775	37300	89	3.89
		8.1	18.6	70/59	42500	34300	1.929	49100	22.0	50100	3.918	36700	93	3.74
	20.0	8.1	18.6	75/63	46500	35600	1.969	53200	23.6	49800	4.097	35800	98	3.56
		8.1	18.6	80/67	50400	36900	2.009	57300	25.1	49600	4.276	35000	103	3.40
		8.1	18.6	85/71	54300	38100	2.049	61300	26.5					
		2.1	4.8	65/55	46900	40800	2.299	54700	20.4	50900	3.774	38000	89	3.95
		2.1	4.8	70/59	50800	40100	2.337	58800	21.7	50700	3.917	37300	93	3.79
	10.0	2.1	4.8	75/63	54700	41300	2.377	62800	23.0	50500	4.096	36500	98	3.61
		2.1	4.8	80/67	58600	42600	2.417	66800	24.2	50300	4.275	35700	103	3.45
		2.1	4.8	85/71	62500	43800	2.457	70900	25.4					
		4.6	10.4	65/55	47300	40900	2.250	55000	21.0	54300	3.844	41200	91	4.14
		4.6	10.4	70/59	51200	40200	2.288	59000	22.4	54100	3.987	40500	95	3.97
40	**15.0**	4.6	10.4	75/63	55100	41500	2.328	63000	23.7	53900	4.165	39700	100	3.79
		4.6	10.4	80/67	59000	42700	2.368	67100	24.9	53700	4.344	38900	105	3.62
		4.6	10.4	85/71	63000	44000	2.409	71200	26.2					
		7.9	18.0	65/55	47700	41100	2.202	55200	21.7	57700	3.913	44300	93	4.32
		7.9	18.0	70/59	51600	40400	2.240	59200	23.0	57600	4.056	43800	97	4.16
	20.0	7.9	18.0	75/63	55500	41600	2.280	63300	24.3	57300	4.235	42800	101	3.96
		7.9	18.0	80/67	59400	42900	2.320	67300	25.6	57100	4.414	42000	106	3.79
		7.9	18.0	85/71	63400	44200	2.360	71500	26.9					
		2.0	4.7	65/55	55300	45300	2.712	64600	20.4	58400	3.946	44900	93	4.33
		2.0	4.7	70/59	59200	44600	2.750	68600	21.5	58200	4.089	44200	97	4.17
	10.0	2.0	4.7	75/63	63200	45800	2.790	72700	22.7	58000	4.268	43400	102	3.98
		2.0	4.7	80/67	67100	47100	2.830	76800	23.7	57800	4.447	42600	107	3.81
		2.0	4.7	85/71	71000	48300	2.870	80800	24.7					
		4.4	10.1	65/55	55700	45400	2.663	64800	20.9	61800	4.016	48100	94	4.51
		4.4	10.1	70/59	59600	44700	2.701	68800	22.1	61600	4.159	47400	98	4.34
50	**15.0**	4.4	10.1	75/63	63600	46000	2.741	73000	23.2	61400	4.337	46600	103	4.15
		4.4	10.1	80/67	67500	47200	2.782	77000	24.3	61200	4.516	45800	108	3.97
		4.4	10.1	85/71	71400	48500	2.822	81000	25.3					
		7.7	17.5	65/55	56200	45600	2.615	65100	21.5	65200	4.085	51300	96	4.67
		7.7	17.5	70/59	60100	44900	2.653	69200	22.7	65100	4.228	50700	100	4.51
	20.0	7.7	17.5	75/63	64000	46200	2.693	73200	23.8	64800	4.407	49800	105	4.31
		7.7	17.5	80/67	67900	47400	2.733	77200	24.8	64600	4.586	48900	110	4.12
		7.7	17.5	85/71	71800	48700	2.773	81300	25.9					
		2.0	4.6	65/55	58800	47000	3.089	69300	19.0	65900	4.139	51800	96	4.66
		2.0	4.6	70/59	62700	46300	3.127	73400	20.1	65700	4.282	51100	100	4.49
	10.0	2.0	4.6	75/63	66600	47600	3.167	77400	21.0	65500	4.461	50300	105	4.30
		2.0	4.6	80/67	70600	48900	3.207	81500	22.0	65300	4.639	49500	110	4.12
		2.0	4.6	85/71	74500	50100	3.247	85600	22.9					
		4.3	9.9	65/55	59200	47200	3.040	69600	19.5	69300	4.208	54900	98	4.82
		4.3	9.9	70/59	63100	46500	3.078	73600	20.5	69100	4.351	54300	102	4.65
60	**15.0**	4.3	9.9	75/63	67000	47800	3.118	77600	21.5	68900	4.530	53400	107	4.45
		4.3	9.9	80/67	71000	49000	3.159	81800	22.5	68700	4.709	52600	112	4.27
		4.3	9.9	85/71	74900	50300	3.199	85800	23.4					
		7.5	17.1	65/55	59600	47400	2.992	69800	19.9	72700	4.278	58100	99	4.98
		7.5	17.1	70/59	63500	46700	3.030	73800	21.0	72600	4.421	57500	103	4.81
	20.0	7.5	17.1	75/63	67500	47900	3.070	78000	22.0	72300	4.600	56600	108	4.60
		7.5	17.1	80/67	71400	49200	3.110	82000	23.0	72100	4.778	55800	113	4.42
		7.5	17.1	85/71	75300	50400	3.150	86100	23.9					

Capacity Data – Size 064 (2000 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	10.0	2.0	4.5	65/55	57400	46600	3.415	69100	16.8	73400	4.338	58600	100	4.95
		2.0	4.5	70/59	61300	45900	3.453	73100	17.8	73200	4.481	57900	104	4.78
		2.0	4.5	75/63	65200	47100	3.493	77100	18.7	73000	4.660	57100	109	4.59
		2.0	4.5	80/67	69200	48400	3.533	81300	19.6	72800	4.839	56300	114	4.41
		2.0	4.5	85/71	73100	49600	3.573	85300	20.5					
	15.0	4.2	9.7	65/55	57800	46700	3.366	69300	17.2	76800	4.408	61800	101	5.10
		4.2	9.7	70/59	61700	46000	3.405	73300	18.1	76600	4.551	61100	105	4.93
		4.2	9.7	75/63	65600	47300	3.445	77400	19.0	76400	4.730	60300	110	4.73
		4.2	9.7	80/67	69600	48500	3.485	81500	20.0	76200	4.908	59400	115	4.55
		4.2	9.7	85/71	73500	49800	3.525	85500	20.9					
	20.0	7.3	16.8	65/55	58200	46900	3.318	69500	17.5	80200	4.477	64900	103	5.25
		7.3	16.8	70/59	62100	46200	3.356	73600	18.5	80100	4.620	64300	107	5.08
		7.3	16.8	75/63	66100	47400	3.396	77700	19.5	79800	4.799	63400	112	4.87
		7.3	16.8	80/67	70000	48700	3.436	81700	20.4	79600	4.978	62600	117	4.68
		7.3	16.8	85/71	73900	49900	3.476	85800	21.3					
80	10.0	1.9	4.4	65/55	53600	45100	3.744	66400	14.3	80900	4.531	65400	103	5.23
		1.9	4.4	70/59	57500	44400	3.782	70400	15.2	80700	4.674	64700	107	5.06
		1.9	4.4	75/63	61400	45600	3.823	74400	16.1	80500	4.853	63900	112	4.86
		1.9	4.4	80/67	65400	46900	3.863	78600	16.9	80300	5.032	63100	117	4.67
		1.9	4.4	85/71	69300	48100	3.903	82600	17.8					
	15.0	4.2	9.5	65/55	54000	45200	3.696	66600	14.6	84300	4.601	68600	105	5.36
		4.2	9.5	70/59	57900	44500	3.734	70600	15.5	84100	4.744	67900	109	5.19
		4.2	9.5	75/63	61900	45800	3.774	74800	16.4	83900	4.922	67100	114	4.99
		4.2	9.5	80/67	65800	47000	3.814	78800	17.3	83700	5.101	66300	119	4.80
		4.2	9.5	85/71	69700	48300	3.854	82900	18.1					
	20.0	7.2	16.5	65/55	54400	45400	3.648	66900	14.9	87700	4.670	71800	106	5.50
		7.2	16.5	70/59	58300	44700	3.686	70900	15.8	87600	4.813	71200	110	5.33
		7.2	16.5	75/63	62300	45900	3.726	75000	16.7	87300	4.992	70300	115	5.12
		7.2	16.5	80/67	66200	47200	3.766	79100	17.6	87100	5.171	69500	120	4.93
		7.2	16.5	85/71	70100	48500	3.806	83100	18.4					
90	10.0	1.9	4.3	65/55	50200	43800	4.146	64400	12.1	88400	4.703	72300	107	5.50
		1.9	4.3	70/59	54100	43100	4.184	68400	12.9	88200	4.846	71700	111	5.33
		1.9	4.3	75/63	58100	44400	4.224	72500	13.8	88000	5.025	70800	116	5.13
		1.9	4.3	80/67	62000	45600	4.264	76600	14.5	87800	5.204	70000	120	4.94
		1.9	4.3	85/71	65900	46900	4.304	80600	15.3					
	15.0	4.1	9.3	65/55	50600	44000	4.098	64600	12.3	91800	4.773	75500	108	5.63
		4.1	9.3	70/59	54500	43300	4.136	68600	13.2	91600	4.916	74800	112	5.46
		4.1	9.3	75/63	58500	44500	4.176	72800	14.0	91400	5.095	74000	117	5.25
		4.1	9.3	80/67	62400	45800	4.216	76800	14.8	91200	5.273	73200	122	5.06
		4.1	9.3	85/71	66300	47000	4.256	80800	15.6					
	20.0	7.1	16.2	65/55	51000	44100	4.049	64800	12.6	95200	4.842	78700	110	5.76
		7.1	16.2	70/59	55000	43400	4.087	68900	13.5	95100	4.985	78100	114	5.59
		7.1	16.2	75/63	58900	44700	4.127	73000	14.3	94800	5.164	77200	119	5.38
		7.1	16.2	80/67	62800	46000	4.167	77000	15.1	94600	5.343	76400	124	5.18
		7.1	16.2	85/71	66700	47200	4.208	81100	15.9					
100	10.0	1.9	4.3	65/55	48100	43100	4.647	64000	10.4					
		1.9	4.3	70/59	52000	42400	4.685	68000	11.1					
		1.9	4.3	75/63	55900	43700	4.725	72000	11.8					
		1.9	4.3	80/67	59900	44900	4.765	76200	12.6					
		1.9	4.3	85/71	63800	46200	4.805	80200	13.3					
	15.0	4.0	9.2	65/55	48500	43300	4.598	64200	10.5					
		4.0	9.2	70/59	52400	42600	4.636	68200	11.3					
		4.0	9.2	75/63	56400	43800	4.676	72400	12.1					
		4.0	9.2	80/67	60300	45100	4.717	76400	12.8					
		4.0	9.2	85/71	64200	46300	4.757	80400	13.5					
	20.0	7.0	16.0	65/55	48900	43400	4.550	64400	10.7					
		7.0	16.0	70/59	52800	42700	4.588	68500	11.5					
		7.0	16.0	75/63	56800	44000	4.628	72600	12.3					
		7.0	16.0	80/67	60700	45200	4.668	76600	13.0					
		7.0	16.0	85/71	64600	46500	4.708	80700	13.7					
110	10.0	1.8	4.2	65/55	44200	41400	5.179	61900	8.5					
		1.8	4.2	70/59	48100	40700	5.217	65900	9.2					
		1.8	4.2	75/63	52000	42000	5.257	69900	9.9					
		1.8	4.2	80/67	56000	43300	5.297	74100	10.6					
		1.8	4.2	85/71	59900	44500	5.337	78100	11.2					
	15.0	4.0	9.1	65/55	44600	41600	5.131	62100	8.7					
		4.0	9.1	70/59	48500	40900	5.169	66100	9.4					
		4.0	9.1	75/63	52500	42200	5.209	70300	10.1					
		4.0	9.1	80/67	56400	43400	5.249	74300	10.7					
		4.0	9.1	85/71	60300	44700	5.289	78400	11.4					
	20.0	6.9	15.8	65/55	45000	41800	5.083	62300	8.9					
		6.9	15.8	70/59	48900	41100	5.121	66400	9.5					
		6.9	15.8	75/63	52900	42300	5.161	70500	10.2					
		6.9	15.8	80/67	56800	43600	5.201	74600	10.9					
		6.9	15.8	85/71	60700	44800	5.241	78600	11.6					

Tint = Operation Not Recommended

Notes:

1. *Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.*
2. *Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.*
3. *See performance correction tables for operating conditions other than those listed.*
4. *Interpolation is permissible; extrapolation is not.*
5. *For performance data outside the EAT listed, refer to the McQuay SelectTools selection program*
6. *Table does not reflect fan or pump power corrections for AHRI/ISO conditions.*
7. *Data is base on unit at full load operation..*

Capacity Data – Size 072 (2160 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	12.0	3.2	7.2	65/55	Tint = Operation Not Recommended (See "Appendix-A" on page 72 for table legend)					43600	4.310	28900	85	2.96
		3.2	7.2	70/59						43300	4.499	27900	88	2.82
		3.2	7.2	75/63						43000	4.734	26800	93	2.66
		3.2	7.2	80/67						42600	4.970	25600	98	2.51
		3.2	7.2	85/71										
	18.0	6.9	15.7	65/55						48800	4.411	33700	87	3.24
		6.9	15.7	70/59						48500	4.599	32800	91	3.09
		6.9	15.7	75/63						48100	4.835	31600	96	2.91
		6.9	15.7	80/67						47700	5.070	30400	100	2.75
		6.9	15.7	85/71										
	24.0	11.9	27.1	65/55						53900	4.512	38500	89	3.50
		11.9	27.1	70/59						53600	4.700	37600	93	3.34
		11.9	27.1	75/63						53200	4.936	36400	98	3.16
		11.9	27.1	80/67						52800	5.171	35200	103	2.99
		11.9	27.1	85/71										
30	12.0	3.1	7.0	65/55						51000	4.468	35800	88	3.34
		3.1	7.0	70/59	63100	47400	2.905	73000	21.7	50700	4.656	34800	92	3.19
		3.1	7.0	75/63	67000	48700	2.948	77100	22.7	50300	4.892	33600	96	3.01
		3.1	7.0	80/67	71000	50000	2.990	81200	23.7	49900	5.127	32400	101	2.85
		3.1	7.0	85/71	75000	51400	3.033	85400	24.7					
	18.0	6.7	15.2	65/55	59700	48700	2.795	69200	21.4	56100	4.569	40500	90	3.60
		6.7	15.2	70/59	63700	47600	2.835	73400	22.5	55800	4.757	39600	94	3.43
		6.7	15.2	75/63	67600	48900	2.878	77400	23.5	55400	4.993	38400	99	3.25
		6.7	15.2	80/67	71600	50300	2.920	81600	24.5	55000	5.228	37200	103	3.08
		6.7	15.2	85/71	75600	51600	2.963	85700	25.5					
	24.0	11.5	26.3	65/55	60300	48900	2.725	69600	22.1	61200	4.670	45300	92	3.84
		11.5	26.3	70/59	64300	47800	2.765	73700	23.3	60900	4.858	44300	96	3.67
		11.5	26.3	75/63	68200	49200	2.808	77800	24.3	60500	5.094	43100	101	3.48
		11.5	26.3	80/67	72200	50500	2.850	81900	25.3	60200	5.329	42000	106	3.31
		11.5	26.3	85/71	76200	51800	2.892	86100	26.3					
40	12.0	3.0	6.8	65/55	64700	52400	3.169	75500	20.4	59000	4.642	43200	91	3.72
		3.0	6.8	70/59	68700	51300	3.209	79700	21.4	58700	4.830	42200	95	3.56
		3.0	6.8	75/63	72600	52600	3.251	83700	22.3	58300	5.066	41000	100	3.37
		3.0	6.8	80/67	76600	53900	3.294	87800	23.3	58000	5.301	39900	105	3.20
		3.0	6.8	85/71	80600	55300	3.336	92000	24.2					
	18.0	6.5	14.7	65/55	65300	52600	3.099	75900	21.1	64200	4.742	48000	93	3.96
		6.5	14.7	70/59	69300	51500	3.139	80000	22.1	63800	4.931	47000	97	3.79
		6.5	14.7	75/63	73200	52800	3.181	84100	23.0	63500	5.166	45900	102	3.60
		6.5	14.7	80/67	77200	54200	3.224	88200	23.9	63100	5.402	44700	107	3.42
		6.5	14.7	85/71	81200	55500	3.266	92300	24.9					
	24.0	11.2	25.5	65/55	65900	52800	3.029	76200	21.8	69300	4.843	52800	96	4.19
		11.2	25.5	70/59	69900	51800	3.069	80400	22.8	69000	5.032	51800	99	4.02
		11.2	25.5	75/63	73800	53100	3.111	84400	23.7	68600	5.267	50600	104	3.81
		11.2	25.5	80/67	77800	54400	3.154	88600	24.7	68200	5.503	49400	109	3.63
		11.2	25.5	85/71	81800	55700	3.196	92700	25.6					
50	12.0	2.9	6.6	65/55	66800	53900	3.492	78700	19.1	67800	4.831	51300	95	4.11
		2.9	6.6	70/59	70800	52900	3.532	82900	20.0	67500	5.019	50400	99	3.94
		2.9	6.6	75/63	74800	54200	3.575	87000	20.9	67100	5.255	49200	104	3.74
		2.9	6.6	80/67	78700	55500	3.617	91000	21.8	66700	5.490	48000	108	3.56
		2.9	6.6	85/71	82700	56800	3.660	95200	22.6					
	18.0	6.3	14.4	65/55	67400	54200	3.422	79100	19.7	72900	4.932	56100	97	4.33
		6.3	14.4	70/59	71400	53100	3.462	83200	20.6	72600	5.120	55100	101	4.15
		6.3	14.4	75/63	75300	54400	3.505	87300	21.5	72200	5.356	53900	106	3.95
		6.3	14.4	80/67	79300	55800	3.547	91400	22.4	71800	5.591	52700	111	3.76
		6.3	14.4	85/71	83300	57100	3.590	95600	23.2					
	24.0	10.9	24.9	65/55	68000	54400	3.352	79400	20.3	78000	5.032	60800	99	4.54
		10.9	24.9	70/59	72000	53300	3.392	83600	21.2	77700	5.221	59900	103	4.36
		10.9	24.9	75/63	75900	54700	3.435	87600	22.1	77300	5.456	58700	108	4.15
		10.9	24.9	80/67	79900	56000	3.477	91800	23.0	77000	5.692	57600	113	3.96
		10.9	24.9	85/71	83900	57300	3.520	95900	23.8					
60	12.0	2.8	6.5	65/55	66400	54000	3.825	79500	17.4	77200	5.036	60000	99	4.49
		2.8	6.5	70/59	70300	52900	3.865	83500	18.2	76900	5.224	59100	103	4.31
		2.8	6.5	75/63	74300	54200	3.908	87600	19.0	76500	5.460	57900	108	4.10
		2.8	6.5	80/67	78300	55600	3.950	91800	19.8	76200	5.695	56800	112	3.92
		2.8	6.5	85/71	82200	56900	3.993	95800	20.6					
	18.0	6.1	14.0	65/55	67000	54200	3.755	79800	17.8	82400	5.137	64900	101	4.70
		6.1	14.0	70/59	70900	53100	3.795	83900	18.7	82100	5.325	63900	105	4.51
		6.1	14.0	75/63	74900	54500	3.838	88000	19.5	81700	5.561	62700	110	4.30
		6.1	14.0	80/67	78900	55800	3.880	92100	20.3	81300	5.796	61500	115	4.11
		6.1	14.0	85/71	82800	57100	3.923	96200	21.1					
	24.0	10.6	24.3	65/55	67600	54400	3.685	80200	18.3	87500	5.237	69600	103	4.89
		10.6	24.3	70/59	71500	53400	3.725	84200	19.2	87200	5.426	68700	107	4.71
		10.6	24.3	75/63	75500	54700	3.768	88400	20.0	86800	5.661	67500	112	4.49
		10.6	24.3	80/67	79500	56000	3.810	92500	20.9	86400	5.897	66300	117	4.29
		10.6	24.3	85/71	83400	57400	3.853	96600	21.6					

Capacity Data – Size 072 (2160 CFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	FT of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	12.0	2.8	6.3	65/55	64200	53100	4.169	78400	15.4	87400	5.257	69500	103	4.87
		2.8	6.3	70/59	68200	52100	4.209	82600	16.2	87100	5.445	68500	107	4.68
		2.8	6.3	75/63	72100	53400	4.252	86600	17.0	86700	5.681	67300	112	4.47
		2.8	6.3	80/67	76100	54700	4.294	90800	17.7	86300	5.916	66100	117	4.27
		2.8	6.3	85/71	80100	56000	4.337	94900	18.5					
	18.0	6.0	13.7	65/55	64800	53400	4.099	78800	15.8	92500	5.357	74200	105	5.06
		6.0	13.7	70/59	68800	52300	4.139	82900	16.6	92200	5.546	73300	109	4.87
		6.0	13.7	75/63	72700	53600	4.182	87000	17.4	91800	5.781	72100	114	4.65
		6.0	13.7	80/67	76700	54900	4.224	91100	18.2	91500	6.017	71000	119	4.45
		6.0	13.7	85/71	80700	56300	4.267	95300	18.9					
	24.0	10.4	23.7	65/55	65400	53600	4.029	79200	16.2	97600	5.458	79000	108	5.24
		10.4	23.7	70/59	69400	52500	4.069	83300	17.1	97300	5.647	78000	111	5.05
		10.4	23.7	75/63	73300	53900	4.112	87300	17.8	97000	5.882	76900	116	4.83
		10.4	23.7	80/67	77300	55200	4.154	91500	18.6	96600	6.118	75700	121	4.62
		10.4	23.7	85/71	81300	56500	4.197	95600	19.4					
80	12.0	2.7	6.2	65/55	61200	51900	4.535	76700	13.5	98300	5.493	79600	108	5.24
		2.7	6.2	70/59	65100	50800	4.575	80700	14.2	98000	5.682	78600	112	5.05
		2.7	6.2	75/63	69100	52200	4.618	84900	15.0	97600	5.917	77400	117	4.83
		2.7	6.2	80/67	73000	53500	4.660	88900	15.7	97200	6.153	76200	121	4.63
		2.7	6.2	85/71	77000	54800	4.703	93100	16.4					
	18.0	5.9	13.5	65/55	61700	52100	4.465	76900	13.8	103400	5.594	84300	110	5.41
		5.9	13.5	70/59	65700	51100	4.505	81100	14.6	103100	5.782	83400	114	5.22
		5.9	13.5	75/63	69700	52400	4.548	85200	15.3	102700	6.018	82200	119	5.00
		5.9	13.5	80/67	73600	53700	4.590	89300	16.0	102300	6.253	81000	124	4.79
		5.9	13.5	85/71	77600	55000	4.632	93400	16.8					
	24.0	10.2	23.3	65/55	62300	52400	4.395	77300	14.2	108500	5.695	89100	112	5.58
		10.2	23.3	70/59	66300	51300	4.435	81400	14.9	108200	5.883	88100	116	5.39
		10.2	23.3	75/63	70200	52600	4.478	85500	15.7	107800	6.119	86900	121	5.16
		10.2	23.3	80/67	74200	54000	4.520	89600	16.4	107500	6.354	85800	126	4.95
		10.2	23.3	85/71	78200	55300	4.562	93800	17.1					
90	12.0	2.7	6.1	65/55	57700	50600	4.940	74600	11.7	109800	5.745	90200	113	5.60
		2.7	6.1	70/59	61600	49500	4.980	78600	12.4	109500	5.934	89200	117	5.40
		2.7	6.1	75/63	65600	50900	5.023	82700	13.1	109200	6.169	88100	122	5.18
		2.7	6.1	80/67	69600	52200	5.065	86900	13.7	108800	6.405	86900	126	4.97
		2.7	6.1	85/71	73500	53500	5.108	90900	14.4					
	18.0	5.8	13.2	65/55	58300	50800	4.870	74900	12.0	115000	5.846	95000	115	5.76
		5.8	13.2	70/59	62200	49800	4.910	79000	12.7	114700	6.035	94100	119	5.57
		5.8	13.2	75/63	66200	51100	4.953	83100	13.4	114300	6.270	92900	124	5.34
		5.8	13.2	80/67	70200	52400	4.995	87200	14.1	113900	6.506	91700	129	5.13
		5.8	13.2	85/71	74100	53800	5.038	91300	14.7					
	24.0	10.0	22.9	65/55	58900	51100	4.800	75300	12.3	120100	5.947	99800	117	5.91
		10.0	22.9	70/59	62800	50000	4.840	79300	13.0	119800	6.135	98900	121	5.72
		10.0	22.9	75/63	66800	51300	4.883	83500	13.7	119400	6.371	97700	126	5.49
		10.0	22.9	80/67	70800	52700	4.925	87600	14.4	119000	6.606	96500	131	5.27
		10.0	22.9	85/71	74700	54000	4.968	91700	15.0					
100	12.0	2.6	6.0	65/55	54100	49400	5.407	72600	10.0					
		2.6	6.0	70/59	58100	48300	5.447	76700	10.7					
		2.6	6.0	75/63	62000	49600	5.489	80700	11.3					
		2.6	6.0	80/67	66000	51000	5.532	84900	11.9					
		2.6	6.0	85/71	70000	52300	5.574	89000	12.6					
	18.0	5.7	13.1	65/55	54700	49600	5.337	72900	10.2					
		5.7	13.1	70/59	58700	48500	5.377	77100	10.9					
		5.7	13.1	75/63	62600	49900	5.419	81100	11.6					
		5.7	13.1	80/67	66600	51200	5.462	85200	12.2					
		5.7	13.1	85/71	70600	52500	5.504	89400	12.8					
	24.0	9.9	22.6	65/55	55300	49800	5.267	73300	10.5					
		9.9	22.6	70/59	59300	48800	5.307	77400	11.2					
		9.9	22.6	75/63	63200	50100	5.349	81500	11.8					
		9.9	22.6	80/67	67200	51400	5.392	85600	12.5					
		9.9	22.6	85/71	71200	52800	5.434	89700	13.1					
110	12.0	2.6	6.0	65/55	50300	48100	5.958	70600	8.4					
		2.6	6.0	70/59	54200	47000	5.998	74700	9.0					
		2.6	6.0	75/63	58200	48400	6.041	78800	9.6					
		2.6	6.0	80/67	62200	49700	6.083	83000	10.2					
		2.6	6.0	85/71	66100	51000	6.126	87000	10.8					
	18.0	5.7	12.9	65/55	50900	48300	5.888	71000	8.6					
		5.7	12.9	70/59	54800	47300	5.928	75000	9.2					
		5.7	12.9	75/63	58800	48600	5.971	79200	9.8					
		5.7	12.9	80/67	62800	49900	6.013	83300	10.4					
		5.7	12.9	85/71	66700	51300	6.056	87400	11.0					
	24.0	9.8	22.4	65/55	51500	48600	5.818	71400	8.9					
		9.8	22.4	70/59	55400	47500	5.858	75400	9.5					
		9.8	22.4	75/63	59400	48800	5.901	79500	10.1					
		9.8	22.4	80/67	63400	50200	5.943	83700	10.7					
		9.8	22.4	85/71	67300	51500	5.986	87700	11.2					

Tint = Operation Not Recommended

Notes:

1. *Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.*
2. *Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.*
3. *See performance correction tables for operating conditions other than those listed.*
4. *Interpolation is permissible; extrapolation is not.*
5. *For performance data outside the EAT listed, refer to the McQuay SelectTools selection program*
6. *Table does not reflect fan or pump power corrections for AHRI/ISO conditions.*
7. *Data is base on unit at full load operation..*

Performance Data

Fan Performance

Table 16: 2-Stage units with constant cfm type ECM motor

Unit Size	Setting	Maximum ESP (in. wg.)	Part Load Stage 1 Heat	Full Load Stage 2 Heat	Part Load Stage 1 Cool	Full Load Stage 2 Cool	Fan Only	Dehumidification	Electric Heat
026	Setting 4 (High)	.70	800	900	800	900	600	600	900
	Setting 3 (Standard)	.70	700	800	700	800	600	600	900
	Setting 2 (Medium)	.70	600	700	600	700	450	600	900
	Setting 1 (Low)	.70	600	600	600	600	450	600	900
032	Setting 4 (High)	.70	1000	1125	1000	1125	750	750	1125
	Setting 3 (Standard)	.70	875	1000	875	1000	750	750	1125
	Setting 2 (Medium)	.70	750	875	750	875	560	750	1125
	Setting 1 (Low)	.70	750	750	750	750	560	750	1125
038	Setting 4 (High)	.70	1250	1400	1250	1400	940	938	1400
	Setting 3 (Standard)	.70	1090	1250	1090	1250	940	938	1400
	Setting 2 (Medium)	.70	940	1090	940	1090	700	938	1400
	Setting 1 (Low)	.70	940	940	940	940	700	938	1400
044	Setting 4 (High)	.70	1400	1575	1400	1575	1050	1050	1575
	Setting 3 (Standard)	.70	1225	1400	1225	1400	1050	1050	1575
	Setting 2 (Medium)	.70	1050	1225	1050	1225	785	1050	1575
	Setting 1 (Low)	.70	1050	1050	1050	1050	785	1050	1575
049	Setting 4 (High)	.70	1600	1800	1600	1800	1200	1200	1800
	Setting 3 (Standard)	.70	1400	1600	1400	1600	1200	1200	1800
	Setting 2 (Medium)	.70	1200	1400	1200	1400	900	1200	1800
	Setting 1 (Low)	.70	1200	1200	1200	1200	900	1200	1800
064	Setting 4 (High)	.70	2000	2250	2000	2250	1500	1500	2250
	Setting 3 (Standard)	.70	1750	2000	1750	2000	1500	1500	2250
	Setting 2 (Medium)	.70	1500	1750	1500	1750	1120	1500	2250
	Setting 1 (Low)	.70	1500	1500	1500	1500	1120	1500	2250
072	Setting 4 (High)	.70	2160	2400	2160	2400	1710	1710	2400
	Setting 3 (Standard)	.70	1920	2160	1920	2160	1710	1710	2400
	Setting 2 (Medium)	.70	1710	1920	1710	1920	1330	1710	2400
	Setting 1 (Low)	.70	1710	1710	1710	1710	1330	1710	2400

Note: *Applications up to 1.0" ESP (in. wg.) are possible. However, increased fan noise should be anticipated and appropriate noise attenuation should be considered.*

Air Flow Correction Factors – Full Load

Table 17: Air flow correction factors (full load) – sizes 026-072

Unit Size	Air Flow Setting	Cooling			Heating	
		Total Capacity	Sensible Capacity	Power Input	Total Capacity	Power Input
026	Setting 4 (High)	1.013	1.070	1.016	1.009	0.996
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.987	0.938	0.985	0.992	1.004
	Setting 1 (Low)	0.975	0.884	0.970	0.983	1.008
032	Setting 4 (High)	1.018	1.091	1.028	1.006	0.997
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.983	0.923	0.974	0.994	1.003
	Setting 1 (Low)	0.966	0.857	0.948	0.987	1.006
036	Setting 4 (High)	1.015	1.061	1.024	1.010	1.004
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.985	0.946	0.977	0.991	0.997
	Setting 1 (Low)	0.970	0.897	0.956	0.981	0.993
044	Setting 4 (High)	1.012	1.050	1.015	1.009	1.002
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.988	0.954	0.985	0.991	0.998
	Setting 1 (Low)	0.976	0.913	0.971	0.982	0.996
049	Setting 4 (High)	1.020	1.079	1.027	1.009	1.003
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.981	0.932	0.974	0.991	0.997
	Setting 1 (Low)	0.962	0.873	0.950	0.982	0.993
064	Setting 4 (High)	1.012	1.070	1.041	0.990	0.987
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.988	0.939	0.962	1.010	1.014
	Setting 1 (Low)	0.976	0.885	0.927	1.021	1.028
072	Setting 4 (High)	1.013	1.075	1.040	1.014	1.020
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.987	0.935	0.963	0.986	0.981
	Setting 1 (Low)	0.975	0.878	0.928	0.973	0.963

Performance Data

Air Flow Correction Factors – Part Load

Table 18: Air flow correction factors (part load) – sizes 026-072

Unit Size	Air Flow Setting	Cooling			Heating	
		Total Capacity	Sensible Capacity	Power Input	Total Capacity	Power Input
026	Setting 4 (High)	1.011	1.080	1.017	1.005	0.991
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.989	0.931	0.984	0.995	1.009
	Setting 1 (Low)	0.989	0.931	0.984	0.995	1.009
032	Setting 4 (High)	1.010	1.046	1.015	1.009	1.005
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.990	0.958	0.985	0.991	0.995
	Setting 1 (Low)	0.990	0.958	0.985	0.991	0.995
036	Setting 4 (High)	1.012	1.066	1.024	1.010	1.004
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.988	0.941	0.977	0.990	0.996
	Setting 1 (Low)	0.988	0.941	0.977	0.990	0.996
044	Setting 4 (High)	1.013	1.086	1.019	1.020	1.003
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.987	0.927	0.982	0.981	0.997
	Setting 1 (Low)	0.987	0.927	0.982	0.981	0.997
049	Setting 4 (High)	1.017	1.094	1.026	1.009	1.002
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.984	0.921	0.975	0.991	0.998
	Setting 1 (Low)	0.984	0.921	0.975	0.991	0.998
064	Setting 4 (High)	1.011	1.070	1.038	1.009	1.014
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.989	0.939	0.965	0.991	0.987
	Setting 1 (Low)	0.989	0.939	0.965	0.991	0.987
072	Setting 4 (High)	1.004	1.075	1.053	1.012	1.025
	Setting 3 (Standard)	1.000	1.000	1.000	1.000	1.000
	Setting 2 (Medium)	0.996	0.935	0.952	0.989	0.976
	Setting 1 (Low)	0.996	0.935	0.952	0.989	0.976

Loop Pump Performance

Figure 24: Single pump performance curve

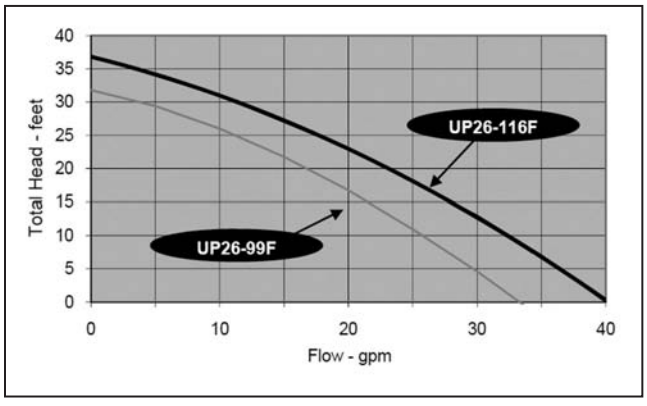
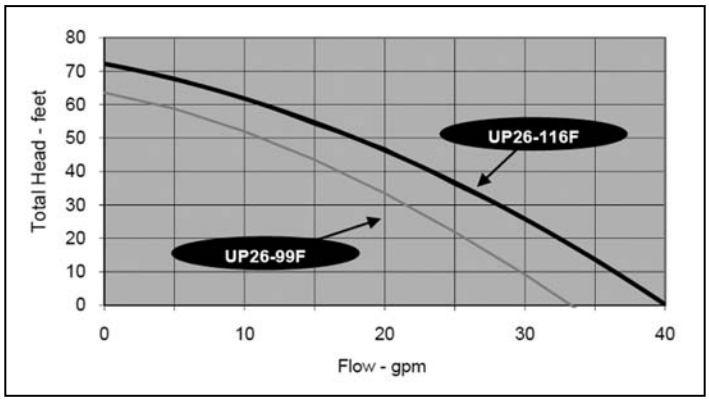


Figure 25: Dual pump performance curve



Desuperheater Performance

Table 19: Desuperheater

Unit Ton	Desuperheater GPM	Desuperheater EWT °F	Cooling Mode		Heating Mode	
			Unit EWT °F	Desuperheater Capacity Btu/hr.	Unit EWT °F	Desuperheater Capacity Btu/hr.
026	0.8	90	77	2,300	32	2,200
			90	2,875	70	3,520
032	1.0	90	77	2,875	32	2,750
			90	3,594	70	4,400
036	1.2	90	77	3,450	32	3,300
			90	4,313	70	5,280
044	1.4	90	77	4,025	32	3,850
			90	5,031	70	6,160
049	1.6	90	77	4,600	32	4,400
			90	5,750	70	7,040
064	2.0	90	77	5,750	32	5,500
			90	7,188	70	8,800
072	2.4	90	77	6,900	32	6,600
			90	8,625	70	10,560

Note: *Capacity data based on nominal rated CFM and nominal rated GPM.*

Electric Heat Performance

Table 20: Two stage electric heat

Nominal Size (Kw)	Applies to Unit Sizes	Voltage													
		208		230		240		265		277		460		480	
		kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh
5	**026 - 072**	3.8	12,826	4.6	15,683	5.0	17,076	4.6	15,628	5.0	17,076	4.6	15,683	5.0	17,076
10	**026 - 072**	7.5	25,652	9.2	31,365	10.0	34,152	8.8	30,007	9.6	32,786	8.8	30,110	9.6	32,786
15	**038 - 072**	11.3	38,478	13.8	47,048	15.0	51,228	-	-	-	-	13.8	47,048	15.0	51,228
20	**038 - 072**	14.9	51,047	18.3	62,417	19.9	67,962	-	-	-	-	18.4	62,730	20.0	68,304

Note: *Electrical data for SmartSource units with options is available from the Daikin McQuay SelectTools™ software selection program. Consult your local Daikin-McQuay representative for further information.*

Waterside Economizer Cooling Capacity - Vertical Unit

Table 21: 600 to 1400 CFM[1]

Unit Size	GPM	CFM										[3]WPD ft. of wc.
		600		800		1000		1200		1400		
		Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	
026, 032	4	20.2	15.6	22.8	18.9	24.8	21.8	26.4	24.1			3.59
	6	23.4	16.9	26.7	20.6	29.3	23.9	31.3	26.7			2.29
	8	25.5	17.8	29.6	21.8	32.7	25.3	35.1	28.5			1.27
	10	27.1	18.5	31.8	22.7	35.4	26.5	38.2	29.8			0.56
	[2]PD (" wc.)	0.07		0.108		0.152		0.201				
038	6			36.3	31.0	34.4	28.2	31.9	25.1	28.9	21.6	1.02
	9			43.1	34.1	40.4	30.9	37.3	27.3	33.3	23.4	2.35
	12			36.1	24.6	40.9	28.8	44.8	32.7	48.0	36.2	4.08
	[2]PD (" wc.)			0.081		0.115		0.152		0.193		
044, 049	8					36.8	27.2	40.0	30.8	42.7	34.1	1.53
	10					39.9	28.5	43.5	32.3	46.6	35.8	2.43
	12					42.2	29.5	46.4	33.5	49.9	37.2	3.46
	[2]PD (" wc.)					0.086		0.114		0.145		
064, 072	12.5									53.1	38.6	2.67
	15									56.2	39.9	3.79
	18									59.1	41.1	5.38
	[2]PD (" wc.)									0.141		

Performance Data

Table 22: 1600 to 2400 CFM[1]

Unit Size	GPM	CFM										[3]WPD ft. of wc.
		1600		1800		2000		2200		2400		
		Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	
044, 049	8	44.9	37.1	46.9	39.8							1.53
	10	49.2	39.0	51.6	42.1							2.43
	12	52.8	40.6	55.3	43.7							3.46
	[2]PD (" wc.)	0.177		0.211								
064, 072	12.5	56.5	42.5	59.5	46.0	62.2	49.3	64.6	52.4	66.8	55.3	2.67
	15	60.1	43.9	63.5	47.8	66.4	51.2	69.1	54.4	71.6	57.5	3.79
	18	63.5	45.3	67.3	49.3	70.7	53.0	73.7	56.5	76.4	59.7	5.38
	[2]PD (" wc.)	0.172		0.205		0.241		0.278		0.318		

Notes: *[1] Capacity is based on 80/67°F entering air and 45°F entering water temperatures. Total and sensible capacities are Mbtuh.*

[2] Air PD is air pressure drop in inches of water column wet coil.

[3] WPD is water side pressure drop in feet of water. Coil pressure drop only.

Waterside Economizer Cooling Capacity - Horizontal Unit

Table 23: 600 to 1400 CFM[1]

Unit Size	GPM	CFM										[3]WPD ft. of wc.
		600		800		1000		1200		1400		
		Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	
026, 032	4	21.6	16.2	24.6	19.6	26.8	22.6	28.6	25.1			0.85
	6	25.1	17.6	29.0	21.5	31.9	25.0	34.3	28.0			1.99
	8	27.3	18.6	32.0	22.8	35.6	26.5	38.5	29.9			3.46
	10	28.9	19.2	34.3	23.7	38.4	27.7	41.8	31.2			5.3
	[2]PD (" wc.)	0.069		0.108		0.152		0.203				
038	6			30.5	22.2	33.8	25.9	36.6	29.2	38.8	32.1	1.4
	9			34.9	24.1	39.4	28.2	42.9	31.9	45.9	35.3	3.07
	12			37.8	25.3	43.0	29.8	47.4	33.8	50.9	37.5	5.31
	[2]PD (" wc.)			0.075		0.105		0.138		0.174		
044, 049	8					39.9	28.5	43.7	32.3	46.8	35.8	2.54
	10					43.0	29.8	47.4	33.9	51.0	37.6	3.88
	12					45.4	30.8	50.3	35.1	54.4	39.1	5.48
	[2]PD (" wc.)					0.082		0.108		0.136		
064, 072	12.5									51.7	37.7	2.69
	15									55.1	39.1	3.82
	18									58.3	40.5	5.42
	[2]PD (" wc.)									0.115		

Table 24: 1600 to 2400 CFM[1]

Unit Size	GPM	CFM										[3]WPD ft. of wc.
		1600		1800		2000		2200		2400		
		Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	
044, 049	8	49.5	39.0	51.8	42.0							2.54
	10	54.1	41.0	56.8	44.2							3.88
	12	57.9	42.7	60.9	46.0							5.48
	[2]PD (" wc.)	0.166		0.199								
064, 072	12.5	55.0	41.3	57.8	44.6	60.4	47.7	62.7	50.6	64.8	53.3	2.69
	15	58.9	42.9	62.2	46.4	65.0	49.7	67.6	52.8	69.9	55.7	3.82
	18	62.6	44.5	66.3	48.1	69.6	51.6	72.5	54.9	75.2	57.9	5.42
	[2]PD (" wc.)	0.142		0.17		0.2		0.229		0.263		

Notes: *[1] Capacity is based on 80/67°F entering air and 45°F entering water temperatures. Total and sensible capacities are Mbtuh.*

[2] Air PD is air pressure drop in inches of water column wet coil.

[3] WPD is water side pressure drop in feet of water. Coil pressure drop only.

Table 25: Standard unit without options

Unit Size	Rated Voltage	Minimum Voltage	Compressor		Fan Motor FLA	Total Unit FLA	Minimum Circuit Amps	Maximum Fuse or HACR Breaker Size
	Voltage		RLA	LRA				
026	208-230/60/1	197	11.7	58.3	3.0	14.7	17.6	25
	265/60/1	239	9.1	54.0	2.6	11.7	14.0	20
	208-230/60/3	197	6.5	55.4	3.0	9.5	11.1	15
	*460/60/3	414	3.5	28.0	2.6	6.1	7.0	15
032	208-230/60/1	197	13.1	73.0	5.0	18.1	21.4	30
	265/60/1	239	10.2	60.0	4.1	14.3	16.9	25
	208-230/60/3	197	8.7	58.0	5.0	13.7	15.9	20
	*460/60/3	414	4.3	28.0	4.1	8.4	9.5	15
038	208-230/60/1	197	15.3	83.0	5.0	20.3	24.1	35
	208-230/60/3	197	11.6	73.0	5.0	16.6	19.5	30
	*460/60/3	414	5.7	38.0	4.1	9.8	11.2	15
044	208-230/60/1	197	17.9	96.0	7.3	25.2	29.7	45
	208-230/60/3	197	14.2	88.0	7.3	21.5	25.1	35
	*460/60/3	414	6.2	44.0	5.5	11.7	13.3	15
049	208-230/60/1	197	21.2	104.0	7.3	28.5	33.8	50
	208-230/60/3	197	14.0	83.1	7.3	21.3	24.8	35
	*460/60/3	414	6.4	41.0	5.5	11.9	13.5	15
064	208-230/60/1	197	27.1	152.9	9.4	36.5	43.3	60
	208-230/60/3	197	16.5	110.0	9.4	25.9	30.0	45
	*460/60/3	414	7.2	52.0	6.9	14.1	15.9	20
072	208-230/60/1	197	29.7	179.2	9.4	39.1	46.5	60
	208-230/60/3	197	17.6	136.0	9.4	27.0	31.4	45
	*460/60/3	414	8.5	66.1	6.9	15.4	17.5	25

Notes: *Electrical data for units with loop pumps, electric heat and other options is available from the Daikin McQuay SelectTools™ software selection program for Water Source Heat Pumps. Consult your local Daikin McQuay representative for further information. *All 460/60/3 units require 4-wire power which includes a neutral wire. See* *"Appendix-B" on page 72*.

Table 26: Electric heat availability

Model	Nominal Capacity	Unit Voltage	Single Power Point			Dual Power Point					
			Electric Heat		Secondary Heat Control	Electric Heat		Secondary Heat Control	Electric Heatt		Secondary Heat Control
			5kW	10kW		5kW	10kW		15kW	20kW	
GTH & GTV	026	208-230/60/1	•	•	B,E,P	•	•	S			
		265/60/1	•		B,E,P	•		S			
		208-230/60/3	•	•	B,E,P	•	•	S			
		460/60/3	•	•	B,E,P	•	•	S			
	032	208-230/60/1	•	•	B,E,P	•	•	S			
		265/60/1	•		B,E,P	•		S			
		208-230/60/3	•	•	B,E,P	•	•	S			
		460/60/3	•	•	B,E,P	•	•	S			
	038	208-230/60/1	•	•	B,E,P	•	•	S	•		B,E,P,S
		208-230/60/3	•	•	B,E,P	•	•	S	•		B,E,P,S
		460/60/3	•	•	B,E,P	•	•	S	•		B,E,P,S
	044	208-230/60/1	•	•	B,E,P	•	•	S	•	•	B,E,P,S
		208-230/60/3	•		B,E,P	•		S			
		460/60/3	•	•	B,E,P	•	•	S	•	•	B,E,P,S
	049	208-230/60/1	•	•	B,E,P	•	•	S	•	•	B,E,P,S
		208-230/60/3	•		B,E,P	•		S			
		460/60/3	•	•	B,E,P	•	•	S	•	•	B,E,P,S
	064	208-230/60/1	•	•	B,E,P	•	•	S	•	•	B,E,P,S
		208-230/60/3	•		B,E,P	•		S			
		460/60/3	•	•	B,E,P	•	•	S	•	•	B,E,P,S
	072	208-230/60/1	•	•	B,E,P	•	•	S	•	•	B,E,P,S
		208-230/60/3	•		B,E,P	•		S			
		460/60/3	•	•	B,E,P	•	•	S	•	•	B,E,P,S

Legend: *B = Boilerless, E = Emergency, P = Primary, S = Supplemental*

Correction Factors

Motorized 2-Way Water Valve

Table 27: Motorized water valve correction factors

Unit Size	Cv	MOPD	Water Pressure Drop Adders		
			GPM	PSI	Ft of H_2O
026	10.3	150	4.0	0.15	0.35
			6.0	0.34	0.78
			8.0	0.60	1.39
032	10.3	150	5.0	0.24	0.54
			7.5	0.53	1.22
			10.0	0.94	2.17
036	8.9	150	6.0	0.45	1.05
			9.0	1.02	2.36
			12.0	1.82	4.19
044	8.9	150	7.0	0.62	1.43
			10.5	1.39	3.21
			14.0	2.47	5.71
049	8.9	150	8.0	0.81	1.86
			12.0	1.82	4.19
			16.0	3.23	7.46
064	8.9	150	10.0	1.26	2.91
			15.0	2.84	6.55
			20.0	5.05	11.65
072	8.9	150	11.7	1.72	3.96
			17.5	3.87	8.92
			23.3	6.87	15.86

Formula:

$$\Delta P = SL\left(\frac{QL}{Cv}\right)^2$$

Where:

Cv – Valve (Flow) coefficient for valves

QL – Liquid flow in gallons per minute (GPM)

Qg – Rate of gas flow in cubic feet per minute at standard conditions, 14.7 PSIA and 60ºF (SCFM)

P1 – Absolute inlet pressure (PSIA)

P1 = Gauge pressure (PSIG) + 14.7

P – Pressure drop in pounds per square inch (PSI)

SL – Specific gravity of flowing liquid relative water at 60ºF

Sg – Specific gravity of gas relative to air.

T – Absolute temperature in degrees Rankine, (ºR)

T = ºF+460

Antifreeze

Table 28: Antifreeze correction factors

	Antifreeze % by weight			
	15%	**25%**	**35%**	**45%**
Ethanol				
Cooling Capacity	0.985	–	–	–
Heating Capacity	0.9825	–	–	–
Pressure Drop	1.04			
Ethylene Glycol				
Cooling Capacity	0.9935	0.9895	0.985	0.981
Heating Capacity	0.9865	0.9795	0.973	0.965
Pressure Drop	1.10	1.16	1.22	1.27
Methanol				
Cooling Capacity	0.985	–	–	–
Heating Capacity	0.9825	–	–	–
Pressure Drop	1.04	–	–	–
Propylene Glycol				
Cooling Capacity	0.985	0.975	0.965	0.955
Heating Capacity	0.981	0.9685	0.952	0.936
Pressure Drop	1.11	1.20	1.31	1.40

Vertical Units

Table 29: Unit sizes 026 through 072

Description	Unit Size						
	026	032	038	044	049	064	072
Compressor Type	Scroll						
Refrigeration Charge (Oz.)	56	56	77	94	85	120	122
Fan Wheel (D x W)	9" x 7"		11" x 10"				
Fan Motor HP	1/3	1/2		3/4		1	
Water Connection Size (FPT)	3/4"			1"			
Desuperheater Connection Size (FPT)	1/2"						
Coax & Water Piping Volume (Gal. @ 70ºF)	0.5		1.1	1.2		2.1	
Condensate Connection Size (FPT)	3/4						
Air Coil Face Area (Sq Ft.)	4.1		4.9	5.6		6.4	
Air Coil Dimensions (H x W)	28" x 21.1"		26" x 27"	30" x 27"		34" x 27"	
Air Coil Rows	3						
Air Coil Tube Size	3/8"						
Filter Size	27.8" x 22.1"		28.9" x 25.9"	28.9" x 29.9"		33.9" x 29.9"	
Operating Weight	231	233	313	350	352	470	477
Shipping Weight	265	267	344	382	384	496	503

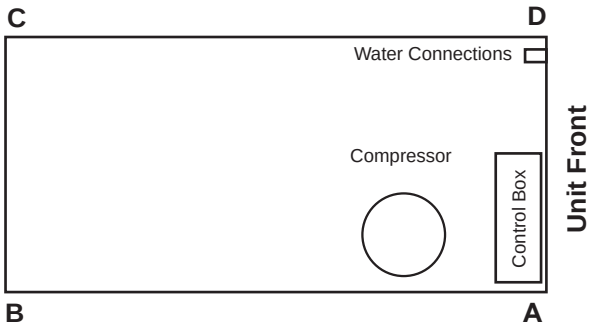
Horizontal Units

Table 30: Unit sizes 026 through 072

Description	Unit Size						
	026	032	038	044	049	064	072
Compressor Type	Scroll						
Refrigeration Charge (Oz.)	56	54	72	90	88	120	122
Fan Wheel (D x W)	9" x 7"		11" x 10"				
Fan Motor HP	1/3	1/2		3/4		1	
Water Connection Size (FPT)	3/4"			1"			
HDesuperheater Connection Size (FPT)	1/2"						
Coax & Water Piping Volume (Gal. @ 70ºF)	0.5		1.1	1.2		2.1	
Condensate Connection Size (FPT)	3/4						
Air Coil Face Area (Sq Ft.)	4.1		5.0	5.6		6.4	
Air Coil Dimensions (H x W)	18" x 32.5"		20" x35.75"	20" x 40.5		20" x 45.9"	
Air Coil Rows	3						
Air Coil Tube Size	3/8"						
Filter Size	16.75" x 34"		18.75" x 37.25"	18.75" x 42.62"		18.75" x 48"	
Operating Weight	254	256	329	365	367	472	478
Shipping Weight	289	291	361	408	410	514	521

Table 31: Horizontal unit corner weights, percentage of total operating weight (base unit only)

Unit Size	Total Operating Weight (lbs.)	Corner Weight % of Total Operating Weight			
		A	B	C	D
026	254	30%	20%	20%	30%
032	256				
038	329				
044	365				
049	367				
064	472				
072	478				



Dimensional Data

Horizontal Unit

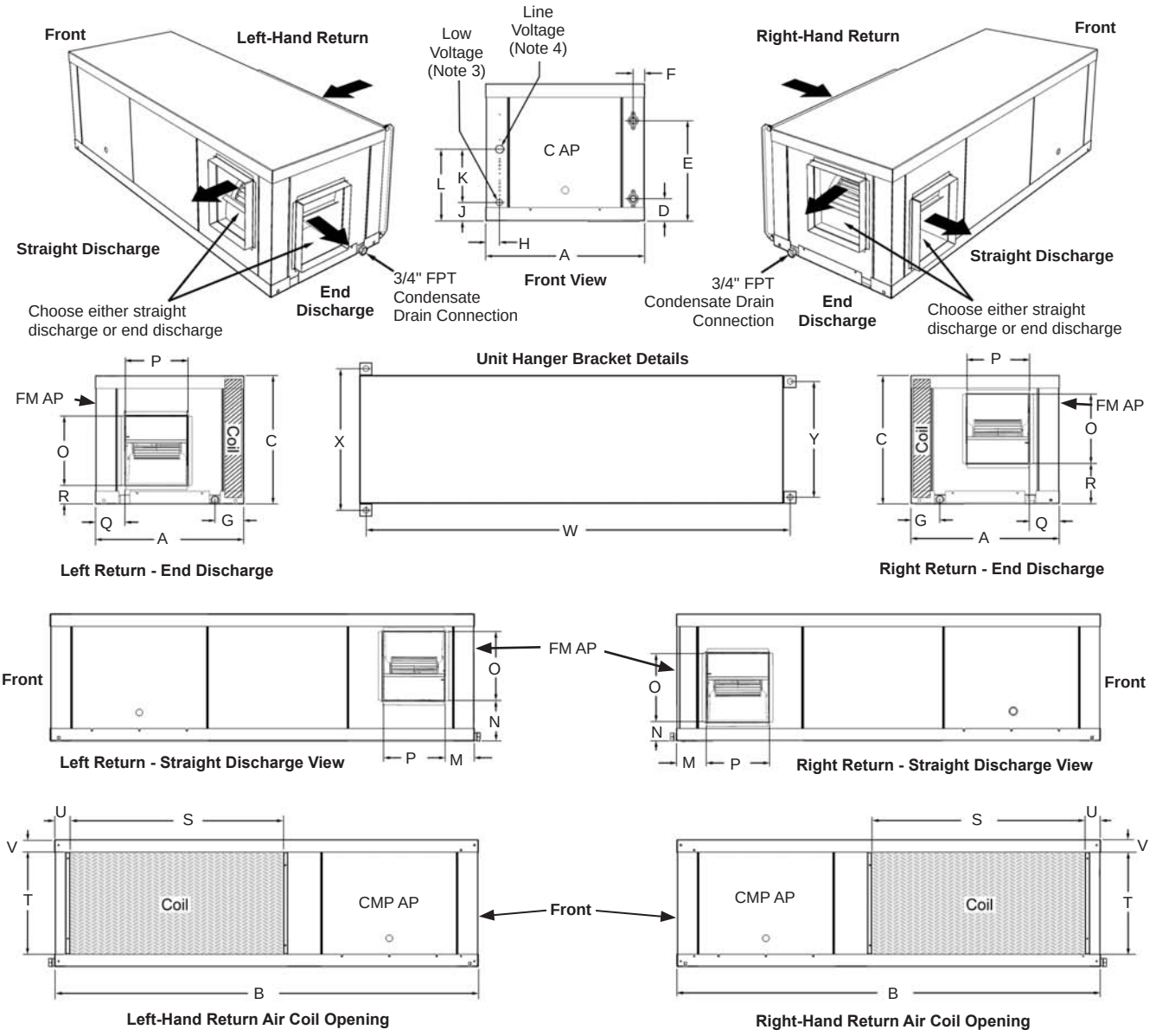


Table 32: Overall cabinet dimensions

GTH-Horizontal Unit	Overall Cabinet Dimensions in inches (mm)		
	A = Width	**B = Length**	**C = Height**
026, 032	22.40" (569)	63.30" (1608)	19.30" (490)
038	25.00" (635)	73.00" (1854)	21.30" (541)
044, 049	25.00" (635)	78.40" (1991)	21.30" (541)
064, 072	25.00" (635)	83.80" (2129)	21.30" (541)

Notes: *All dimensions within ± 0.10 inches (2.5 mm).*

Legend: *CMP AP = Compressor Compartment Access Panel*
C AP = Control Access Panel
FM AP = Fan Motor Access Panel

Table 33: Piping connections dimensions

GTH Horizontal Unit	Piping Connections in inches (mm)				Electrical Connections in inches (mm)			
	D	E	F	G	H	J	K	L
	Supply	Return		Condensate Drain 3/4" FPT		Low Voltage[3]	Between	Line Voltage[4]
026, 032[1]	2.58 (66)	13.39 (340)	1.57 (40)	4.29 (109)	1.94 (49)	2.57 (65)	7.36 (187)	9.93 (252)
038[1]	2.76 (70)	13.57 (345)	1.57 (40)	4.36 (111)	1.94 (49)	3.57 (91)	8.23 (209)	11.81 (300)
044, 049[2]	3.07 (78)	13.88 (353)	1.57 (40)	4.36 (111)	1.94 (49)	3.57 (91)	8.23 (209)	11.81 (300)
064, 072[2]	3.07 (78)	13.88 (353)	1.57 (40)	4.36 (111)	1.94 (49)	3.57 (91)	8.23 (209)	11.81 (300)

Notes: *[1] Supply and return piping connections = 3/4" (19 mm) FPT.*
[2] Supply and return piping connections = 1" (25 mm) FPT.
[3] Low voltage opening = 7/8" (22 mm) diameter.
[4] Line voltage opening = 1-1/8" (29 mm) diameter.

Table 34: Discharge duct & return air coil opening dimensions

GTH Horizontal Unit	Discharge Air Duct Connection in inches (mm)								Return Air Coil Opening in inches (mm)			
	M	N		O	P	Q	R		S	T	U	V
		Left-hand	Right-hand				Left-hand	Right-hand				
026, 032	4.41 (112)	6.20 (157)	2.71 (69)	10.39 (264)	9.32 (237)	4.41 (112)	2.71 (69)	6.20 (157)	32.50 (826)	15.45 (392)	1.97 (50)	1.93 (49)
038	4.88 (124)	4.74 (120)	2.81 (71)	13.75 (349)	13.25 (337)	4.88 (124)	2.81 (71)	4.74 (120)	35.75 (908)	17.45 (443)	1.97 (50)	1.93 (49)
044, 049	4.88 (124)	4.74 (120)	2.81 (71)	13.75 (349)	13.25 (337)	4.88 (124)	2.81 (71)	4.74 (120)	41.15 (1045)	17.45 (443)	1.97 (50)	1.93 (49)
064, 072	4.88 (124)	4.74 (120)	2.81 (71)	13.75 (349)	13.25 (337)	4.88 (124)	2.81 (71)	4.74 (120)	46.56 (1183)	17.45 (443)	1.97 (50)	1.93 (49)

Note: *All duct dimensions are referenced from the outside edge of the flange.*

Table 35: Hanger bracket location dimensions

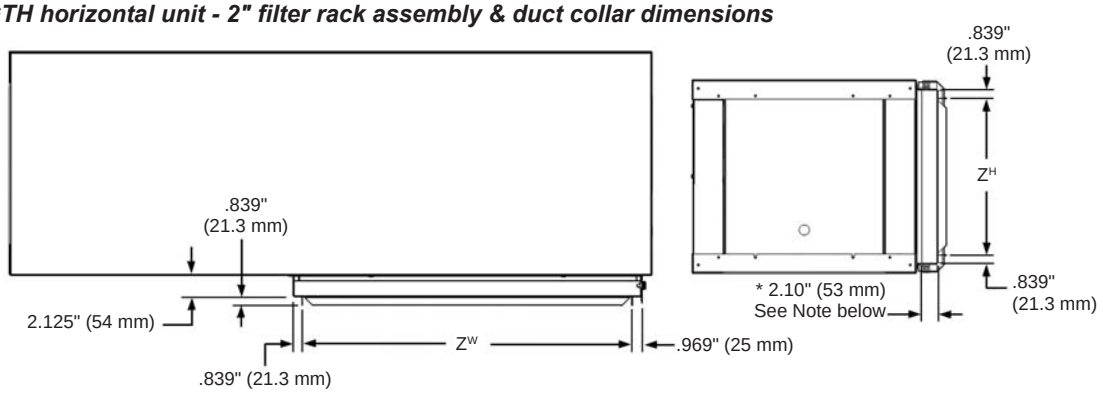
Unit Size	W	X	Y
026, 032	62.16 (1579)	23.90 (607)	18.64 (474)
038	72.16" (1833)	27" (686)	21.24" (539)
044, 049	77.57" (1970)	27" (686)	21.24" (539)
064, 072	82.97" (2107)	27" (686)	21.24" (539)

Note: *All dimensions within ± 0.10 inches (2.5 mm).*

Table 36: 2" filter rack assembly & duct collar dimensions

Unit Size	Z^H	Z^W
026, 032	15.45 (392)	32.51 (826)
038	17.45" (443)	35.76" (908)
044, 049	17.45" (443)	41.15" (1045)
064, 072	17.45" (443)	46.55" (1182)

GTH horizontal unit - 2" filter rack assembly & duct collar dimensions



Note: ** Optional 4" filter rack = 4.10" (104 mm).*

Dimensional Data

Vertical Unit

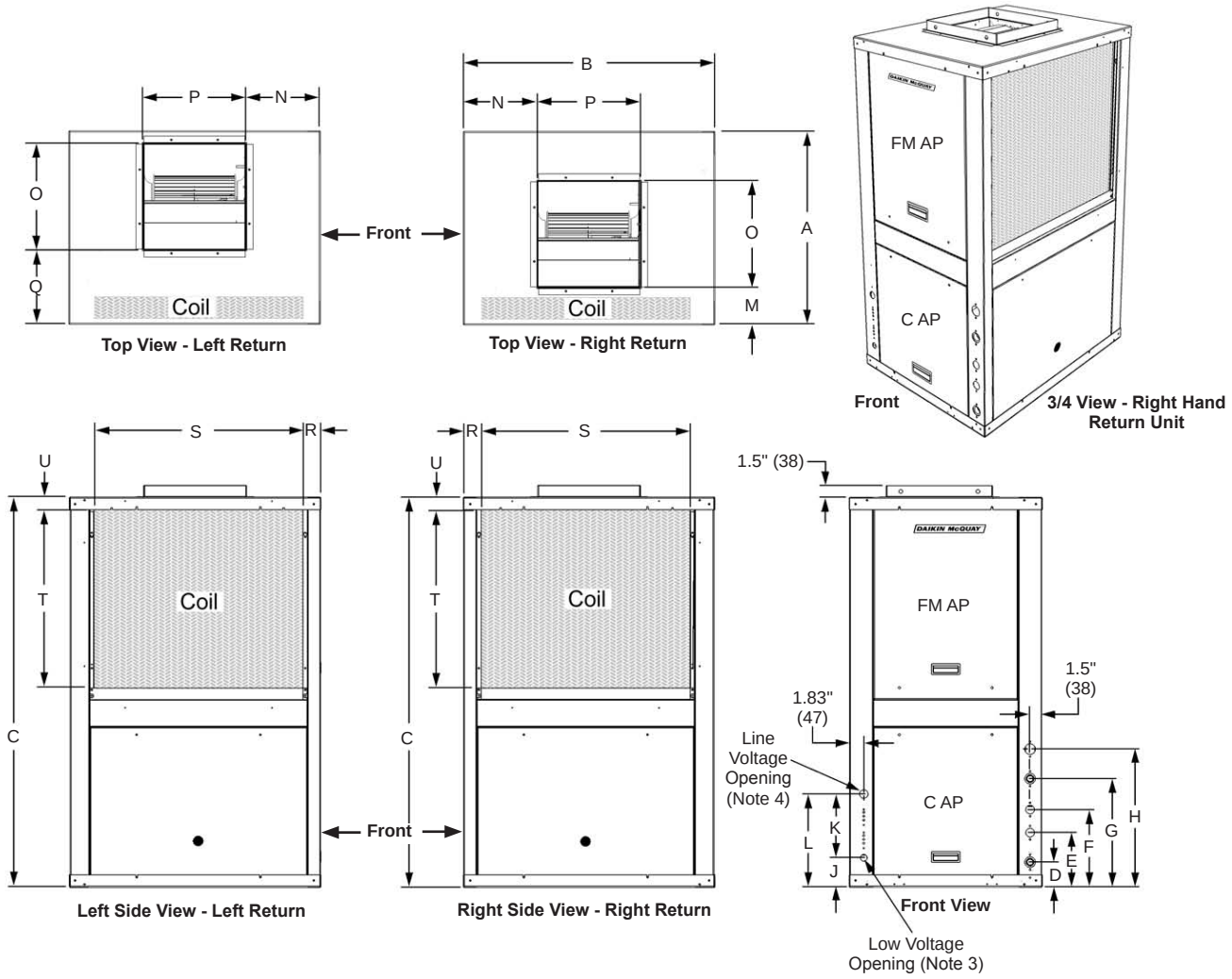


Table 37: Overall cabinet dimensions

GTV-Vertical Unit	Overall Cabinet Dimensions in inches (mm)		
	A = Width	**B = Depth**	**C = Height**
026, 032	22.40" (569)	26.00" (660)	48.00" (1219)
038	25.00" (635)	32.50" (826)	50.50" (1283)
044, 049	25.00" (635)	32.50" (826)	54.50" (1384)
064, 072	25.00" (635)	32.50" (826)	58.50" (1486)

Notes: *All dimensions within ± 0.10 inches (2.5 mm).*

Legend: *CMP AP = Compressor Compartment Access Panel*
C AP = Control Access Panel
FM AP = Fan Motor Access Panel

Table 38: Piping & electrical connections dimensions

GTV Vertical Unit	Piping Connections in inches (mm)					Electrical Connections in inches (mm)		
	D	E	F	G	H	J	K	L
	Supply	Desuperheater Water Supply	Desuperheater Water Return	Return	Condensate Drain 3/4"	Low Voltage[3]	Between	Line Voltage[4]
026, 032[1]	2.58 (66)	6.68 (170)	9.68 (246)	13.39 (340)	17.39 (442)	2.45 (62)	8.63 (219)	11.07 (281)
038[1]	3.26 (83)	7.07 (180)	10.07 (256)	14.07 (357)	17.88 (454)	2.82 (72)	9.25 (235)	12.07 (307)
044, 049[2]	3.07 (78)	7.07 (180)	10.07 (256)	13.88 (353)	17.88 (454)	2.82 (72)	9.25 (235)	12.07 (307)
064, 072[2]	3.07 (78)	7.07 (180)	10.07 (256)	13.88 (353)	17.88 (454)	2.82 (72)	9.25 (235)	12.07 (307)

Notes: *[1] Supply and return piping connections = 3/4" (19 mm) FPT.*

[2] Supply and return piping connections = 1" (25 mm) FPT.

[3] Low voltage opening = 7/8" (22 mm) diameter.

[4] Line voltage opening = 1-1/8" (29 mm) diameter.

Condensate drain = 3/4" (19 mm) FPT.

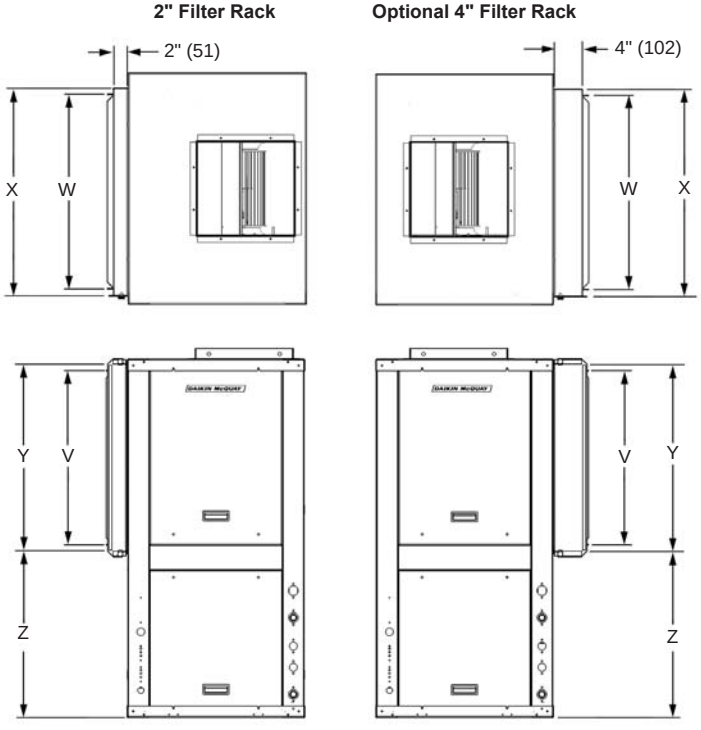
Table 39: Discharge duct collar & return air coil opening dimensions

GTV Vertical Unit	Discharge Duct Collar Connection in inches (mm)					Return Air Coil Opening in inches (mm)			
	M	N	O	P	Q	R	S	T	U
026, 032	5.75 (146)	8.37 (213)	10.39 (264)	9.32 (237)	10.55 (268)	2.87 (73)	20.50 (521)	25.45 (646)	1.62 (41)
038	6.44 (164)	9.63 (245)	13.75 (349)	13.25 (337)	9.63 (245)	2.25 (57)	27.00 (686)	23.10 (587)	1.62 (41)
044, 049	6.44 (164)	9.63 (245)	13.75 (349)	13.25 (337)	9.63 (245)	2.25 (57)	27.00 (686)	27.10 (688)	1.62 (41)
064, 072	6.44 (164)	9.63 (245)	13.75 (349)	13.25 (337)	9.63 (245)	2.25 (57)	27.00 (686)	31.10 (790)	1.62 (41)

Note: *All duct dimensions are referenced from the outside edge of the flange.*

Table 40: Filter rack assembly & return air duct collar dimensions

Unit Size	V	W	X	Y	Z
026, 032	26.48" (673)	20.78" (528)	22.62" (575)	28.15 (715)	19.09 (485)
038	24.57" (624)	27.38" (696)	29.22" (742)	26.25 (667)	23.50 (597)
044, 049	28.57" (726)	27.38" (696)	29.22" (742)	30.25 (768)	23.50 (597)
064, 072	32.57" (827)	27.38" (696)	29.22" (742)	34.25 (870)	23.50 (597)



Horizontal Unit

General

Units shall be supplied completely factory assembled, piped, internally wired, fully charged with R-410A and capable of operation with an entering water temperature range from 55°F to 110°F on water loop models, 30°F to 110°F on geothermal ground loop and ground water models. All equipment must be rated and certified in accordance with ARI / ISO 13256-1 and must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL-1995 for the United States and CAN/CSA-C22.2 NO.236 for Canada. The units shall have AHRI/ISO and ETL-US-C labels. Each unit shall be run tested at the factory. The installing contractor shall be responsible for furnishing and installing Daikin-McQuay Water Source Heat Pumps as indicated on the plans and per installation instructions.

Casing and Cabinet

The outer cabinet shall be powder-coat painted as standard color textured paint. The cabinet shall be fabricated from heavy gauge G-60 galvanized sheet metal with interior surfaces lined with the following insulation options:

Standard insulation in the compressor compartment shall be ½" fiberglass – multicoated type. Standard insulation on the air side shall be ½" fiberglass cleanable foil faced type with edges sealed or tucked in order to prevent introduction of fibers into the discharge air. Standard cabinet insulation must meet NFPA 90A requirements, air erosion and mold growth limits of UL-181, fungal resistance test per ASTM-C1071 and ASTM G21, and shall meet zero level bacteria growth per ASTM G22. All insulation shall have a flame spread of less than 25 and a smoke developed classification of less than 50 per ASTM E-84 and UL 723.

- **Factory-installed option 1:** Compressor Section and/or Air Handling Section
  - 1/2-inch thick, 1-1/2 lb. [1/2" thick coated glass fiber insulation foil faced fiber insulation for ease of cleaning.
- **Factory-installed option 2:** Compressor Section and/or Air Handling Section
  - 3/8-inch thick closed-cell non-fibrous IAQ insulation

A geothermal extended range option shall be available for units and is made up of a refrigerant metering device (TXV) and wrapped condenser coil. Closed cell insulation shall be added to the internal water lines and on suction side refrigerant tubing including refrigerant to water heat exchanger.

Units shall be configured in one of the following airflow arrangements:

- Left Return/End Discharge
- Left Return/Straight Discharge
- Right Return/End Discharge
- Right Return/Straight Discharge

Units shall have a factory-installed, 4-sided, 1" duct flange on the discharge of the blower to allow connection of field duct-work and must have a minimum of two access panels, one for the compressor compartment and one for the blower compart-ment. Unit shall have an insulated panel separating the blower compartment from the compressor compartment. Units are to ship with heavy metal brackets, rubber isolators, fasteners and washers to suspend and isolate the unit from the building.

Cabinets shall have separate openings and knockouts for entrance of line voltage and low voltage control wiring. Supply and return water connections shall be FPT fittings and shall be securely mounted flush to the cabinet corner post allowing for con-nection to a flexible hose without the use of a back-up wrench.

It is the installing contractor’s responsibility to provide sufficient clearance so that units can be easily removed for servicing.

Drain pan

Unit shall utilize corrosion resistant closed-cell insulated stainless steel drain pans. A stub out connection shall be provided. The drain pan shall be designed to ensure no pooling of condensate water per ASHRAE 62.2. The unit will be supplied with solid-state electronic condensate overflow protection as standard. Mechanical float switches will not be accepted.

Filter Rack and Filters

Unit shall come standard with a 2-inch disposable filter and a 2-inch, 4 sided factory-installed combination filter rack/return air duct collar. The filters shall be removable from either side of the unit.

As selectable options, unit shall have a 2-inch thick MERV 8 OR 4 inch MERV 13 filter, factory-installed with a 2-inch or 4 inch factory-installed combination filter rack/return air duct collar.

All filter racks shall be gasketed between the filter rack and the unit cabinet along with a gasket on the tool-less removable door to achieve a leakage rate of less than 4 CFM per square foot of filter area at .5” ESP. The rack shall be 4-sided with door and duct collar.

Refrigerant Circuit

Units shall have a sealed refrigerant circuit, which includes a non-CFC depleting R-410A refrigerant [rotary (sizes 007-019), and scroll compressor (sizes 024 to 070)]. In addition, each unit will have a thermostatic expansion valve, an aluminum fin and rifled copper tube refrigerant-to-air heat exchanger, a reversing valve and a water-to-refrigerant coaxial heat exchanger. The coaxial coils shall be made of [copper] [or optional cupronickel] and shall be deeply fluted to enhance heat transfer and minimize fouling and scaling. The coaxial coil shall have a working pressure of 400 psig on the waterside of the unit and 500 psig on the refrigerant side for all R-410A units.

The compressor shall have a dual level vibration isolation system. The compressor will be mounted on vibration isolation grommets to a heavy gauge compressor mounting plate, which is then isolated from the cabinet base with rubber grommets to minimize vibration transfer. Compressor shall have thermal overload protection. Compressor shall be located in an insulated compartment away from air stream to minimize sound transmission.

Refrigerant metering shall be regulated by a thermostatic expansion valve (TXV) only. Reversing valve shall be four-way solenoid activated refrigerant valve, which fails in the cooling "dominant" operation. Safety controls include a high-pressure switch, a low-pressure switch, and a low refrigerant temperature sensor. Refrigerant gauge access fittings shall be factory-installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety switch shall prevent the compressor from operating.

Evaporator coils shall be supplied with an optional corrosion resistant e-coated epoxy coating that must pass a ASTM B-117 1000-hour salt spray test to provide protection against corrosion due to acids, solvents, and salt found in the environment.

Desuperheater

The optional desuperheater (available on units 2 tons or larger) shall be factory-installed in the compressor compartment and used to add supplemental heating, using superheated refrigerant gas through a tube-in-tube heat exchanger to the domestic hot water supply. The desuperheater pump shall be factory-installed inside the unit compressor compartment and water lines shall be fastened to the exterior panel with flush mounted brass NPT fittings.

Hot Gas Reheat Smart Dehumidification Option

The optional factory-installed hot gas reheat coil shall be used as part of a dehumidification operating sequence. Hot gas reheat shall be enabled when the space humidity level is above a user selectable set point, typically, 50 to 55% RH. Superheated refrigerant gas shall be diverted to the reheat coil and unit fan shall operate at dehumidification fan speed upon a call for dehumidification. This option includes a hot gas reheat coil and a solenoid actuated 3-way valve. Coil shall be proof and leak tested. A corrosion resistant epoxy coated hot gas reheat coil shall be available as an option.

Simplified Dehumidification Option

Available as a factory-installed option, unit shall be configured to allow for maximum latent capacity while decreasing room humidity levels by optimizing blower fan speed for dehumidification. Option requires a thermostat with a minimum of 3 cooling stages.

Humidistat Controlled Dehumidification Option

Available as a factory-installed option, unit shall be configured to allow for maximum latent capacity while decreasing room humidity levels by optimizing blower fan speed for dehumidification. Option requires a humidistat as well as a thermostat with a minimum of 2 cooling stages.

Dehumidification Always Option

Available as a factory-installed option, for cooling only applications, this option shall utilize a humidistat only. Upon a call from the humidistat, the unit shall be configured to run at dehumidification blower speed combined with maximum compressor speed, allowing for maximum latent capacity.

Waterside Economizer

A factory mounted and wired waterside economizer shall consist of a hydronic cooling coil located between the unit filter rack and evaporator, a 2-position 3-way diverting valve, a manual air vent, and an entering fluid sensor. The waterside economizer outer cabinet shall be powder-coat painted with standard color textured paint. The cabinet shall be fabricated from heavy gauge G-60 galvanized sheet metal with interior surfaces lined with a minimum 3/8-inch thick closed-cell non-fibrous IAQ insulation. Components shall be accessible without removing economizer. An insulated stainless steel drain pan compliant with ASHRAE 62.1 including electronic condensate overflow protection shall be provided. Economizer flush mounted piping connections shall be on the same side as the WSHP unit piping connections. Hose kits shall be provided for field connection of economizer to WSHP unit. For corrosive environment applications, a corrosion resistant epoxy coated coil shall be available.

The unit mounted control system shall allow economizer operation for either supplemental to mechanical unit cooling or independent, based on entering fluid temperature and refrigerant suction temperature operating conditions. Economizer operation shall be permitted when entering fluid temperature is below 55°F yet adjustable between 70°F to 50°F. Economizer operation shall be initiated from a 3-stage wall mounted thermostat or room temperature sensor. Economizer operation shall not be permitted when entering fluid temperature is below 35°F.

Motorized Water Isolation Valves

The optional 2-way motorized isolation valves shall be factory-installed inside the compressor compartment. The valve actuator shall be factory wired to the MicroTech III SmartSource unit controller and be controlled when there is a call for heating or cooling. The valve shall have an end switch to ensure valve is fully opened prior to compressor operation.

External Loop Pump(s)

This option includes the addition of an externally mounted water pump on unit sizes 2 tons and larger. The pump shall be similar to a Grundfos U26-99 or U26-116, or equivalent. Single pump or dual pumps available. Pumps shall be piped in series. The pump(s) shall be able to produce nominal GPM (3 GPM/ton) and be able to overcome the internal pressure drop of the coax HX, plus 30 feet additional water pressure drop with 25% PG antifreeze solution.

Fan and Motor Assembly

All units shall have a direct drive centrifugal fan. The fan housing shall have a removable orifice ring to facilitate fan motor and fan wheel removal. The fan housing shall protrude through the cabinet to facilitate field supply duct connection. The standard fan motor shall be ECM type isolated from the fan housing and shall have internal thermal overload protection. The fan and motor assembly must be capable of overcoming the external static pressures as shown on the schedule. The ECM motor shall deliver precise speed and economical performance regardless of system static pressure. PSC motor shall be available as an option for single-stage units only.

Disconnect Switch

This factory-installed option shall include the addition of a 2 or 3-pole switch mounted inside the unit and the knob or handle protruding through the corner post. The switch shall have a lockout/tag out feature. The switch shall be rated to be added to all units to handle the unit only (not to include additional amperage from field installed accessories). The switch shall be rated to handle all the voltages available for the unit. **460/3/60 requires 4-wire power service.**

Compressor Disable Switch

This factory-installed option shall allow the ability to bypass compressor operation in the event of compressor failure and allow the fan and electric heat to operate as a means of emergency heat.

Sound Package

Available as a factory installed option, units shall utilize sound attenuating compressor blankets combined with high technology sound attenuating material that is strategically applied within the air handling compartment to further reduce sound transmitted by the unit while in operation.Coaxial Coil Supply Liquid Auto Flow Regulator

This factory-installed option includes the addition of an automatic flow control valve to set and limit the GPM through the unit. The valve shall have a “replaceable cartridge” capability. The valve shall be rated for 600 psig. **Note: This option will not be available with External Water Pump option**.

Electrical

A control box shall be located within the unit and shall contain controls for compressor, reversing valve and fan motor operation and shall have either, a 50VA or 75VA transformer and a terminal block for low voltage field wiring connections. Unit shall be name-plated to accept time delay fuses or HACR circuit breaker for branch over-current protection of the power source. Unit control system shall provide heating or cooling as required by the set points of the wall thermostat. The unit control scheme shall provide for fan operation simultaneous with compressor operation (fan interlock) regardless of the thermostat type. The unit shall be capable of providing an output signal to an LED on the thermostat or to a central monitoring panel to indicate a “fault” condition from the activation of any one of the safety switches.

Solid-State Control System

MicroTech III SmartSource Control System - Unit shall have a microprocessor- based control system. The unit control logic shall provide cooling, heating, smart dehumidification, and/or economizer operation as required by the thermostat and/or sensor. The control system shall provide the following for stand-alone operation:

1. The use of standard non-programmable or programmable wall thermostats.
2. Fan operation simultaneous with the compressor (fan interlock) regardless of thermostat logic.
3. Time delay compressor operation.
4. Compressor short cycle protection of a minimum of three minutes before restart is possible.
5. Random unit start-up
6. Single grounded wire connection for activation of the unoccupied or unit shutdown modes.
7. Night setback temperature setpoint input signal from the wall thermostat.
8. Override signal from wall thermostat to override unoccupied mode for 2 hours.
9. Brownout protection to suspend unit operation if the supply voltage drops below 80% of normal.
10. Condensate overflow protection to suspend cooling operation in an event of a full drain pan.
11. Suspended compressor operation upon activation of the refrigerant pressure switch(es).
12. Cooling operation activated for 60 seconds upon activation of the low suction temperature sensor - defrost cycle.
13. Method of defeating compressor, reversing valve and fan time delays for fast service diagnostics.
14. Remote Alarm reset - Provides ability to remotely reset the unit upon a fault condition.
15. Fault Retry clears faults the first two times they occur within a 24-hour period and triggers automatic lock-out on third fault.
16. Control shall be configurable to accommodate thermostat or sensor based control.
17. ECM fan motor control.

MicroTech™ III Control with LonWorks communication module – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a LonMark communications network. The unit controller is factory programmed [LonMark ® 3.4 certified Application Code the current standard for new applications] and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions via a LonMark communications network. Units with the MicroTech III and LonWorks communication module include return air, discharge air and leaving water temperature sensors. Space temperature sensor options include a set-point adjustment, tenant override button, and the capability of substituting the return air sensor with a wall-mounted room sensor.

MicroTech III SmartSource Control w/ BACNet Communication module – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a BACNet communications network. The BACnet communication module shall incorporate an Atmel ARM7 Thumb series MCU and be capable of supporting a full MSTP BACnet implementation. The microprocessor shall also support SPI compatible communications with the MCU of the MicroTech III SmartSource unit controller. The physical interface to a BACnet BAS network shall be through an industry standard RS-485 transceiver capable of existing on an RS- 485 network of up to 64 nodes. The unit controller is factory programmed and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions via a BACnet communications network. Units outfitted with Microtech III and BACnet Communication modules include return air, discharge air and leaving water temperature sensors. Space temperature sensor options include a set-point adjustment, tenant override button, and the capability of substituting the return air sensor with a wall-mounted room temperature sensor.

Each communicating unit controller performs the following unit operations:

- Enable heating and cooling to maintain space temperature set point at the room sensor
- Enable fan and compressor operation
- Monitor all safety controls
- Monitor discharge and return air temperature
- Monitor leaving water temperature
- Relay status of all vital unit functions
- Support optional control outputs

Unit mounted LED annunciators aid in diagnosing unit operation by indicating the water source heat pump operating mode and alarm conditions. If there are no current alarm conditions, a green LED on the annunciator board will indicate occupied unit operating mode. If an alarm condition exists, the MicroTech III SmartSource unit controller will send the fault condition to the LED annunciator, which will assist in troubleshooting the unit. Heat pumps with the MicroTech III SmartSource unit controller with a LonWorks Communication Module is designed to be linked with a centralized Building Automation System (BAS) through a LonMark communications network for centralized scheduling and management of multiple heat pumps.

Wall-mounted room sensors are available to control the heating and cooling operation of each MicroTech III Water Source Heat Pump.

Warranty

- An optional 2, 4, or 10-year extended compressor warranty covers the compressor from the date at which the unit ships from the factory.
- An optional 2, 4, or 10-year extended refrigeration circuit warranty covers the entire refrigeration circuit and related components for 5 years.

Field Installed Accessories and Options

Wall Thermostats:

- Programmable Touch Screen Thermostat
  1. Optional Remote Room Sensor
  2. Optional Outdoor Temperature Sensor
- Non-Programmable Thermostat
  1. Optional Remote Room Sensor
- Programmable Thermostat
  1. Optional Remote Room Sensor

Wall Mounted Room Temperature Sensors

- Digitally Adjustable Wall Sensor with Temperature and Humidity Display
- Adjustable Cool/Warm with Occupancy Switch, Override/Reset Button, Status LED, Fan and System Switch
- Adjustable 55°F to 95°F and 12°C to 33°C, Override/Reset Button, Status LED, Fan and System Switch
- Adjustable-5°F to +5°F and -21°C to -15°C, Override/Reset Button, Status LED, Fan and System Switch
- Basic Sensor, Override/Reset Button, Status LED

Humidistat

To be used in conjunction with one of the dehumidification options. Humidistat to be wall mounted and capable of providing solid state input to unit controls to enable/disable dehumidification features.

Hose Kits

Two fire-rated flexible hoses with ASTM ratings of Flame Spread 25, Fuel Contribution 25 and Smoke Density 50 for connection to unit and field piping. Hose shall be covered with stainless steel braiding to prevent damage.

Condensate Hose Kits

- Optional plastic hose including fittings
- Optional fire-rated, braided steel hose including fittings

Valve Options

- Optional 2-way, Normally Open (N.O.) or Normally Closed (N.C.) motorized valves.
- Optional 2-way, mechanical ball valve

Automatic Flow Hose Kit

The automatic flow hose kit shall include an automatic flow control valve, two ball valves, two flexible hoses, a high flow Y-strainer, and may include a strainer blow-down and various other accessories. The automatic flow control valve shall be factory set to a rated flow, and shall automatically control the flow to within 10% of the rated value over a 40 to 1 differential pressure, operating range (2 to 80 PSID). Operational temperature shall be rated from fluid freezing, to 225°F. The valve body shall be constructed from hot forged brass UNS C37700 per ASTM B-283 latest revision.

Replacement Filters

2-inch MERV 8, 4 inch MERV 13, and 2-inch disposable filters shall be available as direct replacement to factory-installed filters.

Electric Heat Coils

An optional 5, 10, 15, or 20 kW field installed duct heater shall be available. These heaters will require a field provided power source. 15 and 20 kW heaters shall be 2-stage.

Vertical Unit

General

Units shall be supplied completely factory assembled, piped, internally wired, fully charged with R-410A and capable of operation with an entering water temperature range from 55°F to 110°F on water loop models, 30°F to 110°F on geothermal ground loop and ground water models. All equipment must be rated and certified in accordance with ARI / ISO 13256-1 and must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL-1995 for the United States and CAN/CSA-C22.2 NO.236 for Canada. The units shall have AHRI/ISO and ETL-US-C labels. Each unit shall be run tested at the factory. The installing contractor shall be responsible for furnishing and installing McQuay Water Source Heat Pumps as indicated on the plans and per installation instructions.

Casing and Cabinet

The outer cabinet shall be powder-coat painted as standard color textured paint. The cabinet shall be fabricated from heavy gauge G-60 galvanized sheet metal with interior surfaces lined with the following insulation options:

Standard insulation in the compressor compartment shall b 1/2" fiberglass – multicoated type. Standard insulation on the air side shall be 1/2" fiberglass cleanable foil faced type with edges sealed or tucked in order to prevent introduction of fibers into the discharge air. Standard cabinet insulation must meet NFPA 90A requirements, air erosion and mold growth limits of UL-181, fungal resistance test per ASTM-C1071 and ASTM G21, and shall meet zero level bacteria growth per ASTM G22. All insulation shall have a flame spread of less than 25 and a smoke developed classification of less than 50 per ASTM E-84 and UL 723.

- Factory-installed option 1: Compressor Section & Air Handling Section
  - 1/2-inch thick, 1-1/2 lb. [1/2" thick coated glass fiber insulation foil faced fiber insulation for ease of cleaning.
  - Factory-installed option 2: Compressor Section & Air Handling Section
- 3/8-inch thick closed-cell non-fibrous IAQ insulation

A geothermal extended range option shall be available for all high efficiency products and is made up of a refrigerant metering device (TXV) and wrapped condenser coil. Closed cell insulation shall be added to the internal water lines and on suction side refrigerant tubing including refrigerant to water heat exchanger.

Airflow Configurations

Units shall be configured in one of the following airflow arrangements:

- Left Return/Top Discharge
- Right Return/Top Discharge

Units shall have a factory-installed, 4-sided, 1" duct flange on the discharge of the blower to allow connection of field duct-work and must have a minimum of two access panels, one for the compressor compartment and one for the blower compartment. Unit shall have an insulated panel separating the blower compartment from the compressor compartment. Units are to ship with heavy metal brackets, rubber isolators, fasteners and washers to suspend and isolate the unit from the building.

Cabinets shall have separate openings and knockouts for entrance of line voltage and low voltage control wiring. Supply and return water connections shall be FPT fittings and shall be securely mounted flush to the cabinet corner post allowing for connection to a flexible hose without the use of a back-up wrench.

It is the installing contractor's responsibility to provide sufficient clearance so that units can be easily removed for servicing.

Drain pan

Unit shall utilize corrosion resistant closed-cell insulated stainless steel drain pans. A stub out connection shall be provided. The drain pan shall be designed to ensure no pooling of condensate water per ASHRAE 62.2. The unit will be supplied with solid-state electronic condensate overflow protection as standard. Mechanical float switches will not be accepted.

Filter Rack and Filters

Unit shall come standard with a 2-inch disposable filter and a 2-inch, 4-sided factory-installed combination filter rack/return air duct collar. The filters shall be removable from either side of the unit.

As selectable options, unit shall have a 2-inch thick MERV 8 OR 4 inch MERV 13 filter, factory-installed with a 2-inch or 4-inch factory-installed combination filter rack/return air duct collar.

All filter racks shall be gasketed between the filter rack and the unit cabinet along with a gasket on the tool-less removable door to achieve a leakage rate of less than 4 CFM per square foot of filter area at .5" ESP. The rack shall be 4-sided with door and duct collar.

Refrigerant Circuit

Units shall have a sealed refrigerant circuit, which includes a non-CFC depleting R-410A refrigerant [rotary (sizes 007-019), and scroll compressor (sizes 024 to 070)]. In addition, each unit will have a thermostatic expansion valve, an aluminum fin and rifled copper tube refrigerant-to-air heat exchanger, a reversing valve and a water-to-refrigerant coaxial heat exchanger. The coaxial coils shall be made of [copper] [or optional cupronickel] and shall be deeply fluted to enhance heat transfer and minimize fouling and scaling. The coaxial coil shall have a working pressure of 400 psig on the waterside of the unit and 500 psig on the refrigerant side for all R-410A units.

The compressor shall have a dual level vibration isolation system. The compressor will be mounted on vibration isolation grommets to a heavy gauge compressor mounting plate, which is then isolated from the cabinet base with rubber grommets to minimize vibration transfer. Compressor shall have thermal overload protection. Compressor shall be located in an insulated compartment away from air stream to minimize sound transmission.

Refrigerant metering shall be regulated by a thermostatic expansion valve (TXV) only. Reversing valve shall be four-way solenoid activated refrigerant valve, which fails in the cooling "dominant" operation. Safety controls include a high-pressure switch, a low-pressure switch (sizes 019 to 070 only) and a low refrigerant temperature sensor. Refrigerant gauge access fittings shall be factory-installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety switch shall prevent the compressor from operating.

Evaporator coils shall be supplied with an optional corrosion resistant e-coated epoxy coating that must pass a ASTM B-117 1000-hour salt spray test to provide protection against corrosion due to acids, solvents, and salt found in the environment.

Electric Heat Coils

The optional 5, 10, 15, or 20 kW electric heat coil shall be factory-installed inside the unit cabinet, be integral to the supply fan housing and be used as boilerless, supplemental, primary, or emergency heat. 15 and 20 kW heaters shall be 2-stage.

Desuperheater

The optional desuperheater shall be factory-installed in the compressor compartment and used to add supplemental heating, using superheated refrigerant gas through a tube-in-tube heat exchanger to the domestic hot water supply. Water lines shall be fastened to the exterior panel with flush mounted brass NPT fittings.

- Factory-Installed Option: The desuperheater pump shall be factory-installed inside the unit. (Voltage 208-230/60/1 and 208-230/60/3 only)

Hot Gas Reheat Smart Dehumidification Option

The optional factory-installed hot gas reheat coil shall be used as part of a dehumidification operating sequence. Hot gas reheat shall be enabled when the space humidity level is above a user selectable set point, typically, 50 to 55% RH. Superheated refrigerant gas shall be diverted to the reheat coil and unit fan shall operate at dehumidification fan speed upon a call for dehumidification. This option includes a hot gas reheat coil and a solenoid actuated 3-way valve. Coil shall be proof and leak tested. A corrosion resistant epoxy coated hot gas reheat coil shall be available as an option.

Simplified Dehumidification Option

Available as a factory-installed option, unit shall be configured to allow for maximum latent capacity while decreasing room humidity levels by optimizing blower fan speed for dehumidification. Option requires a thermostat with a minimum of 3 cooling stages.

Humidistat Controlled Dehumidification Option

Available as a factory-installed option, unit shall be configured to allow for maximum latent capacity while decreasing room humidity levels by optimizing blower fan speed for dehumidification. Option requires a humidistat as well as a thermostat with a minimum of 2 cooling stages.

Dehumidification Always Option

Available as a factory-installed option, for cooling only applications, this option shall utilize a humidistat only. Upon a call from the humidistat, the unit shall be configured to run at dehumidification blower speed combined with maximum compressor speed, allowing for maximum latent capacity.

Waterside Economizer

A factory mounted and wired waterside economizer shall consist of a hydronic cooling coil located between the unit filter rack and evaporator, a 2-position 3-way diverting valve, a manual air vent, and an entering fluid sensor. The waterside economizer outer cabinet shall be powder-coat painted with standard color textured paint. The cabinet shall be fabricated from heavy gauge G-60 galvanized sheet metal with interior surfaces lined with a minimum 3/8-inch thick closed-cell non-fibrous IAQ insulation. Components shall be accessible without removing economizer. An insulated stainless steel drain pan compliant with ASHRAE 62.1 including electronic condensate overflow protection shall be provided. Economizer flush mounted piping connections shall be on the same side as the WSHP unit piping connections. Hose kits shall be provided for field connection of economizer to WSHP unit. For corrosive environment applications, a corrosion resistant epoxy coated coil shall be available.

The unit mounted control system shall allow economizer operation for either supplemental to mechanical unit cooling or independent, based on entering fluid temperature and refrigerant suction temperature operating conditions. Economizer operation shall be permitted when entering fluid temperature is below 55°F yet adjustable between 70°F to 50°F. Economizer operation shall be initiated from a 3-stage wall mounted thermostat or room temperature sensor. Economizer operation shall not be permitted when entering fluid temperature is below 35°F.

Motorized Water Isolation Valves

The optional 2-way motorized isolation valves shall be factory-installed inside the compressor compartment. The valve actuator shall be factory wired to the Microtech III controller and be controlled when there is a call for heating or cooling. The valve shall have an end switch to ensure valve is fully opened prior to compressor operation.

External Loop Pumps

This option includes the addition of an externally mounted water pump on unit sizes 2 tons and larger. The pump shall be similar to a Grundfos U26-99 or U26-116, or equivalent. Single pump or dual pumps available. Pumps shall be piped in series. The pump(s) shall be able to produce nominal GPM (3 GPM/ton) and be able to overcome the internal pressure drop of the coax HX, plus 30 feet additional water pressure drop with 25% PG antifreeze solution.

Fan and Motor Assembly

The standard fan motor shall be ECM type, isolated from the fan housing and shall have internal thermal overload protection. All units shall have a direct drive centrifugal fan. The fan housing shall have a removable orifice ring to facilitate fan motor and fan wheel removal. The fan housing shall protrude through the cabinet to facilitate field supply duct connection. The fan and motor assembly must be capable of overcoming the external static pressures as shown on the schedule. For unit sizes 015 – 072, the constant CFM ECM motor shall deliver precise speed and economical performance regardless of system static pressure. Unit sizes 007 – 012 shall utilize a constant torque ECM motor type.

The CFM settings shall be field-adjustable with easy to adjust rotary dial. The unit shall be shipped at one fixed setting.

Disconnect Switch

This factory-installed option shall include the addition of a 2 or 3-pole switch mounted inside the unit and the knob or handle protruding through the corner post. The switch shall have a lockout/tag out feature. The switch shall be rated to be added to all units to handle the unit only (not to include additional amperage from field installed accessories). The switch shall be rated to handle all the voltages available for the unit. (460/3/60 requires 4-wire power service.)

Compressor Disable Switch

This factory-installed option shall allow the ability to bypass compressor operation in the event of compressor failure and allow the fan and electric heat to operate as a means of emergency heat.

Sound Package

Available as a factory installed option, units shall utilize sound attenuating compressor blankets combined with high tech¬nology sound attenuating material that is strategically applied within the air handling compartment to further reduce sound transmitted by the unit while in operation.

Coaxial Coil Supply Liquid Auto Flow Regulator

This factory-installed option includes the addition of an automatic flow control valve to set and limit the GPM through the unit. The valve shall have a "replaceable cartridge" capability. The valve shall be rated for 600 psig. **Note: This option will not be available with External Water Pump option.**

Electrical

A control box shall be located within the unit and shall contain controls for compressor, reversing valve and fan motor operation and shall have either, a 50VA or 75VA transformer and a terminal block for low voltage field wiring connections. Unit shall be name-plated to accept time delay fuses or HACR circuit breaker for branch over-current protection of the power source. Unit control system shall provide heating or cooling as required by the set points of the wall thermostat. The unit control scheme shall provide for fan operation simultaneous with compressor operation (fan interlock) regardless of the thermostat type. The unit shall be capable of providing an output signal to an LED on the thermostat or to a central monitoring panel to indicate a "fault" condition from the activation of any one of the safety switches.

Solid-State Control System

MicroTech III Control System - Unit shall have a microprocessor- based control system. The unit control logic shall provide heating and cooling operation as required by the wall thermostat set point. The control system shall provide the following for stand-alone operation:

1. The use of standard non-programmable or programmable wall thermostats.
2. Fan operation simultaneous with the compressor (fan interlock) regardless of thermostat logic.
3. Time delay compressor operation.
4. Delayed de-energizing of the reversing valve for quiet reversing valve operation.
5. Compressor short cycle protection of a minimum of three minutes before restart is possible.
6. Random unit start-up
7. Single grounded wire connection for activation of the unoccupied or unit shutdown modes.
8. Night setback temperature setpoint input signal from the wall thermostat.
9. Override signal from wall thermostat to override unoccupied mode for 2 hours.
10. Brownout protection to suspend unit operation if the supply voltage drops below 80% of normal.
11. Condensate overflow protection to suspend cooling operation in an event of a full drain pan.
12. Suspended compressor operation upon activation of the refrigerant pressure switch(es).
13. Cooling operation activated for 60 seconds upon activation of the low suction temperature sensor - defrost cycle.
14. Method of defeating compressor, reversing valve and fan time delays for fast service diagnostics.
15. Remote reset - Provides means to remotely reset automatic lock-outs generated by high/low pressure faults and/or low temperature faults.
16. Fault Retry clears faults the first two times they occur within a 24-hour period and triggers automatic lock-out on third fault.

MicroTech™ III Control with LonWorks communication module – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a LonMark communications network. The unit controller is factory programmed [LonMark ® 3.4 certified Application Code the current standard for new applications] and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions via a LonMark communications network. Units with the MicroTech III and LonWorks communication module include return air, discharge air and leaving water temperature sensors. Space temperature sensor options include a set-point adjustment, tenant override button, and the capability of substituting the return air sensor with a wall-mounted room sensor.

Microtech III Control w/ BACnet Communication module – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a BACnet communications network. The BACnet communication module shall incorporate an Atmel ARM7 Thumb series MCU and be capable of supporting a full MSTP BACnet implementation. The microprocessor shall also support SPI compatible communications with the MCU of the Microtech III controller. The physical interface to a BACnet BAS network shall be through an industry standard RS-485 transceiver capable of existing on an RS- 485 network of up to 64 nodes. The unit controller is factory programmed and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions via a BACnet communications network. Units outfitted with Microtech III and BACnet Communication modules include return air, discharge air and leaving water temperature sensors. Space temperature sensor options include a set-point adjustment, tenant override button, and the capability of substituting the return air sensor with a wall-mounted room temperature sensor.

Each communicating unit controller performs the following unit operations:

- Enable heating and cooling to maintain space temperature set point at the room sensor
- Enable fan and compressor operation
- Monitor all safety controls
- Monitor discharge and return air temperature
- Monitor leaving water temperature
- Relay status of all vital unit functions
- Support optional control outputs

Unit mounted LED annunciators aid in diagnosing unit operation by indicating the water source heat pump operating mode and alarm conditions. If there are no current alarm conditions, a green LED on the annunciator board will indicate normal unit operating mode. If an alarm condition exists, the MicroTech III SmartSource unit controller will send the fault condition to the LED annunciator, which will assist in troubleshooting the unit. Heat pumps with the MicroTech III SmartSource unit controller with a LonWorks Communication Module is designed to be linked with a centralized Building Automation System (BAS) through a LonMark communications network for centralized scheduling and management of multiple heat pumps.

Wall-mounted room sensors are available to control the heating and cooling operation of each MicroTech III Water Source Heat Pump.

Warranty

- An optional 2, 4, or 10-year extended compressor warranty covers the compressor from the date at which the unit ships from the factory.
- An optional 2, 4, or 10-year extended refrigeration circuit warranty covers the entire refrigeration circuit and related components for 5 years.

Field Installed Accessories and Options

Wall Thermostats:

- Programmable Touch Screen Thermostat
  1. Optional Remote Room Sensor
  2. Optional Outdoor Temperature Sensor
- Non-Programmable Thermostat
  1. Optional Remote Room Sensor
- Programmable Thermostat
  1. Optional Remote Room Sensor

Wall Mounted Room Temperature Sensors:

- Digitally Adjustable Wall Sensor with Temperature and Humidity Display
- Adjustable Cool/Warm with Occupancy Switch, Override/Reset Button, Status LED, Fan and System Switch
- Adjustable 55° to 95°F and 12° to 33°C, Override/Reset Button, Status LED, Fan and System Switch
- Adjustable -5°F to +5°F and -20°C to -15°C, Override/Reset Button, Status LED, Fan and System Switch
- Basic Sensor, Override/Reset Button, Status LED

Humidistat

To be used in conjunction with one of the dehumidification options. Humidistat to be wall mounted and capable of providing solid state input to unit controls to enable/disable dehumidification features.

Hose Kits

Two fire-rated flexible hoses with ASTM ratings of Flame Spread 25, Fuel Contribution 25 and Smoke Density 50 for connection to unit and field piping. Hose shall be covered with stainless steel braiding to prevent damage.

Condensate Hose Kits

- Optional plastic hose including fittings
- Optional fire-rated, braided steel hose including fittings

Valve Options

- Optional 2-way, Normally Open (N.O.) or Normally Closed (N.C.) motorized valves.
- Optional 2-way, mechanical ball valve

Automatic Flow Hose Kit

The automatic flow hose kit shall include an automatic flow control valve, two ball valves, two flexible hoses, a high flow Y-strainer, and may include a strainer blow-down and various other accessories. The automatic flow control valve shall be factory set to a rated flow, and shall automatically control the flow to within 10% of the rated value over a 40 to 1 differential pressure, operating range (2 to 80 PSID). Operational temperature shall be rated from fluid freezing, to 225°F. The valve body shall be constructed from hot forged brass UNS C37700 per ASTM B-283 latest revision.

Stand for Vertical Units

A steel, corrosion resistant stand shall be offered to be used to raise the vertical WSHP's above floor level. Height shall be fixed and not selectable.

Replacement Filters

2-inch MERV 8, 4 inch MERV 13, and 2-inch disposable filters shall be available as direct replacement to factory-installed filters.

Electric Heat Coils

An optional 5, 10, 15, or 20 kW field installed duct heater shall be available. These heaters will require a field provided power source. 15 and 20 kW heaters shall be 2-stage.

Appendix-A

Capacity table legend:

Btu/hr = British Thermal Units per Hour
CFM = Airflow Rate, Cubic Feet per Minute
COP = Coefficient of Performance
EAT = Entering Air Temperature
EER = Energy Efficiency Ratio
EWT = Entering Water Temperature
Ft of W.C. = Feet of Water Column
GPM = Gallons per Minute
kW = Kilowatts
LAT = Leaving Air Temperature
PSI = Pounds per Square Inch
THA = Total Heat of Absorption
THR = Total Heat of Rejection
WPD = Waterside Pressure Drop

◄ *BACK TO "Capacity Data – Size 026 (800 CFM)" on page 36 .*

Appendix-B

Note: *ECM motors on 460/60/3 volt units require a 265 volt power supply. Both a hot AND a neutral wire are required to obtain proper fan motor voltage. Therefore, 4-wires with a wye type wiring arrangement is required.*

This page left blank intentionally

This page left blank intentionally

This page left blank intentionally

Daikin McQuay Water Source Heat Pumps
A Complete Line of Quality Products, Flexible Configurations

Daikin McQuay Training and Development
Now that you have made an investment in modern, efficient Daikin McQuay equipment, its care should be a high priority. For training information on all Daikin McQuay HVAC products, please visit us at www.daikinmcquay.com and click on Training, or call 540-248-9646 and ask for the Training Department.

Warranty
All Daikin McQuay equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin McQuay Representative for warranty details. Refer to Form 933-430285Y. To find your local Daikin McQuay Representative, go to www.daikinmcquay.com.

Aftermarket Services
To find your local parts office, visit www.daikinmcquay.com or call 800-37PARTS (800-377-2787). To find your local service office, visit www.daikinmcquay.com or call 800-432-1342.
This document contains the most current product information as of this printing. For the most up-to-date product information, please go to www.daikinmcquay.com.

Products manufactured in an ISO certified facility.

McQuay® International
a member of DAIKIN group

©2012 McQuay International • www.daikinmcquay.com • (800) 432-1342 Catalog 1114-1 (6/12)